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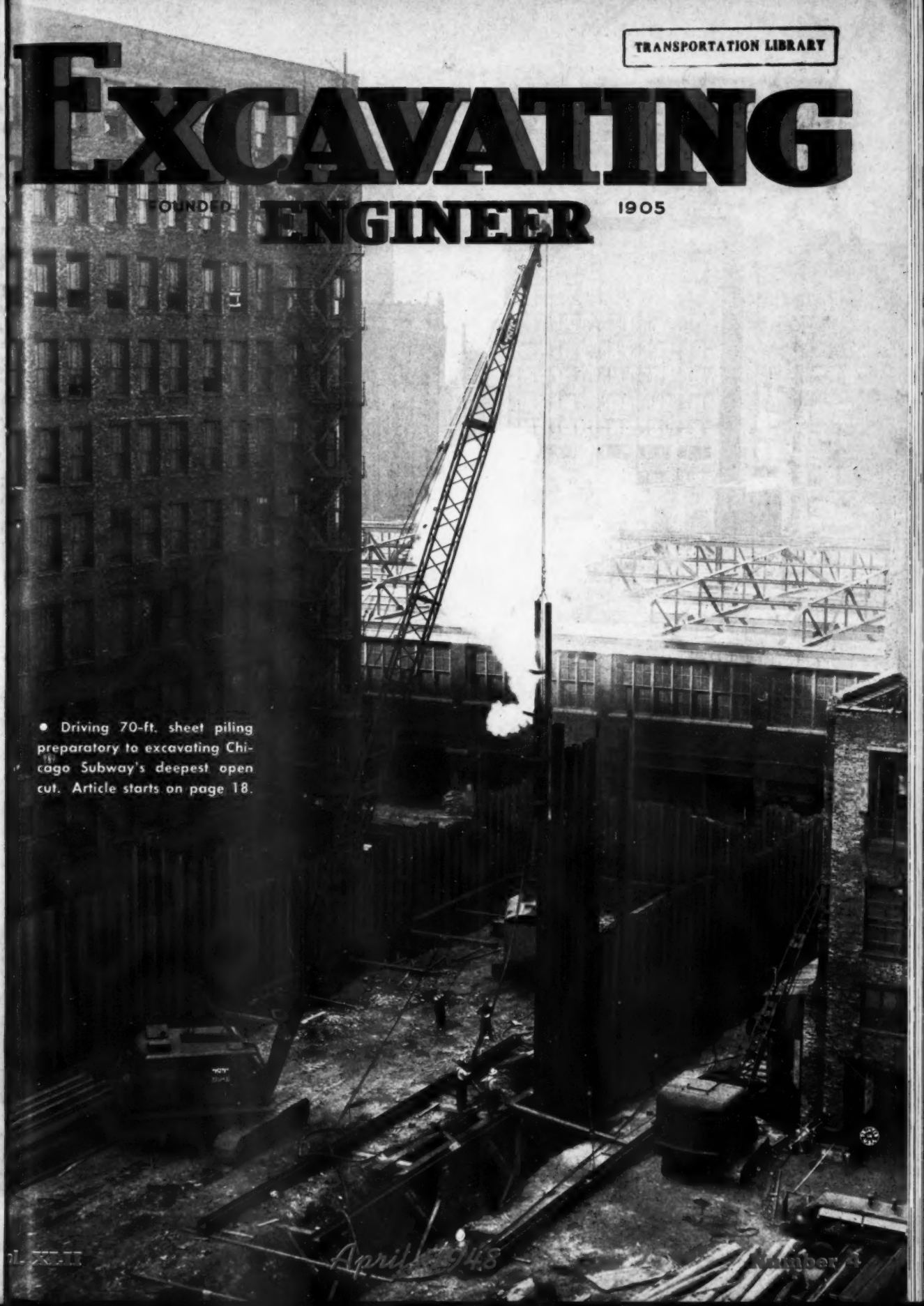

• Driving 70-ft. sheet piling preparatory to excavating Chicago Subway's deepest open cut. Article starts on page 18.

Vol. XLII April 1948 Number 4

You Can Depend On Experience

To Build A Fine Dredge

The "Riachuelo", a 15-inch hydraulic dredge, used in river-dredging operations in Argentina.

The 8- to 12-yard dipper dredge "Mogul" at work for the Great Lakes Dredge & Dock Co., in Lake Erie.

An 8-foot placer dredge mining gold in the Yankee Fork of the Salmon River, Idaho.

THAT'S ONE REASON WHY Bucyrus-Erie is best qualified to design and build a dredge for you, for Bucyrus-Erie's outstanding record of achievement extends over more than 60 years, during which it has been responsible for most of the important developments in hydraulic, placer and dipper dredge design, and has built over 74,000 machines for dry-land and underwater excavation. Added to this background of experience are the most complete manufacturing facilities in the industry and skilled craftsmen working with modern tools and methods to produce "years ahead" machines that will give you efficient, economical production throughout their long years of service.

16D47C

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WISCONSIN

Call your "roll"

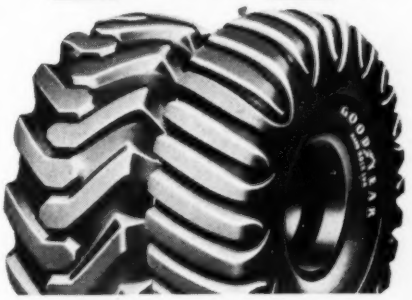
ALL-WEATHER EARTH MOVER
for drawn vehicles and general traction

—here's your tire

BUY and SPECIFY
GOODYEAR
—it pays!

1898 50 GOODYEAR ANNIVERSARY 1948

A RIGHT TIRE FOR EACH JOB



SURE-GRIP for maximum traction on drive wheels.

HARD ROCK LUG for super-stamina in all rock work.

HARD ground? Soft clay? Giant loads? Fast schedules? No matter what the job conditions, you will find no tire for the wheels of drawn vehicles, or for general traction, excels the "roll" ability and stamina of Goodyear's All-Weather Earth Mover. It's the job-proved specialist that moves big loads fast and sure at bedrock cost. Reason? Its wide, rounded contours provide maximum flotation, prevent deep penetration of the ground surface, reduce skids and slippage, give surefooted going.

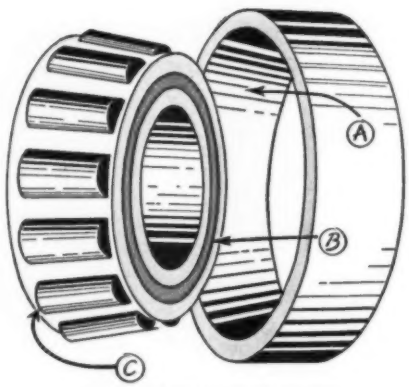
Fact is, All-Weather Earth Movers — like *all* Goodyear work tires — are first choice with users. And they *stay* first choice because they keep on delivering low-cost, long-life performance. That's why year after year, *more yards are moved on Goodyear off-the-road tires than on any other kind!*

GOODYEAR

MORE YARDS ARE MOVED ON GOODYEAR OFF-THE-ROAD TIRES THAN ON ANY OTHER KIND

All-Weather, Sure-Grip —T.M.'s The Goodyear Tire & Rubber Company

CASE 1025--PROVIDING CONSTANT LUBRICATION IN WHEEL BEARINGS.



AUTOMOTIVE ROLLER WHEEL BEARING

Wheel bearings in trucks hauling heavy loads in desert heat, winter cold and rain, were in perfect condition long after usual servicing periods when the bearings were lubricated with RPM Wheel Bearing Grease. Recommended for all sizes and types of wheel bearings. Apply to bearing assemblies by hand or with mechanical lubricators.

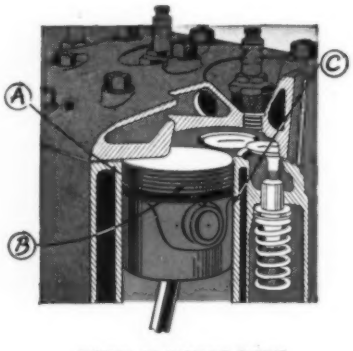
A. Maintains tough, resilient film on bearing surfaces - protects during constant pounding of road shocks and under overload pressures.

B. Feeds slowly to bearing parts ... resists extreme temperatures - will not melt and run from hubs onto brakes.

C. Stays in smallest bearing clearances.

RPM Wheel Bearing Grease provides good lubrication in the presence of water.

CASE 1017--REDUCING OVER-HAULS IN GASOLINE ENGINES.



SECTION OF GASOLINE ENGINE

When gasoline engines were lubricated with compounded RPM Motor Oil, pistons, cylinders, valve stems and other oil-contacted parts remained clear of carbon, gum and lacquer. Wear was minimized and rusting was not a problem. Recommended for gasoline and butane engines. Seven grades: SAE 10/10W to SAE 70.

A. Contains detergent which loosens and removes carbonaceous matter, keeps it dispersed in the oil so it is removed with drainings. Assures free-working rings, valves and other parts.

B. Sticks to hot spots - reduces usual wear on upper cylinders and pistons.

C. Adherence to cylinders when engine is idle minimizes starting wear and prevents rusting - moisture will not cut through oil film.

Other compounds in RPM Motor Oil resist oxidation, prevent corrosion of bearings, and stop foaming.

For additional information and the name of your nearest Distributor, write

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Standard Oil Company of Texas
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EXCAVATING ENGINEER

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Published Monthly by
THE EXCAVATING ENGINEER PUBLISHING COMPANY
South Milwaukee, Wisconsin, U. S. A.

E. M. HEUSTON, Publisher — P. H. WOODS, Editor
D. B. REED, JR., Manager — M. B. JAEGER, Associate Editor
M. J. BARGENQUEST, Sales Manager — E. W. ARNDT, Art Editor
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...er Subscription (payable in advance): 25 cents per copy, $2.50 a year: Canada ... foreign, subject to publication policy, $3.50 per year. Special subscription: ... written request on company letterhead this publication will be sent free of ...e to companies, executives and supervisors engaged actively in excavating.

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AIR POWER

armored against depreciation . .

Depreciation, breakdowns, obsolete equipment, "too little"! **These are the powerful, never-ending profit-eaters that every contractor fights.**

You start the battle with ingenuity, proper care and good maintenance of equipment, and a practical plan for replacement and expansion.

Win the battle! Buy modern, *quality* MOBIL-AIR Compressors . . . *armored* against depreciation . . . *resistant* to breakdown . . . *dependable* in all kinds of weather and good for many years of hard service . . . *easy to operate, service, and maintain . . . tough* machines that *stay efficient.*

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J. S. BARRETT USING A NORTHWEST PULLSHOVEL AT NEWPORT BEACH, CALIFORNIA.

LOOK at it, dry, hard, rocky going that really tests a piece of equipment. This is the kind of going where you need real power, where you need real boom and bucket design that will stand the gaff.

Talk to anyone that has used a Northwest Pullshovel and *other makes* of pullshovels. Ask them about the Northwest. They'll tell you it's the only pullshovel they would put into tough ditching work. Northwest dependability plus the many other Northwest advantages, is the reason why one out of every three Northwests sold is a repeat order.

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Follow the NORTHWEST CROWD

Still the Standard toward which others build!

If you have a REAL ROCK SHOVEL *you won't have to worry about output in dirt*

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SHOVELS • • CRANES • • DRAGLINES • • PULLSHOVELS

YOU can't afford to miss the *Road Show!*

JULY 1948
TUES. WED. THURS. FRI. SAT.
1 2 3
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13 14 15 16 17
18 19 20 21 22 23 24
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Mark your calendar!
Make your plans!

BETTER ROADS FOR A BETTER WORLD
45th Annual Convention and Road Show
SOLDIER FIELD CHICAGO
JULY 16-24, 1948
AMERICAN ROAD BUILDERS ASSOCIATION

No matter how busy you are . . . it will pay you to drop everything — July 16 to 24 — and ride, drive, or fly to the big 1948 Road Show in Chicago.

Here — *in one place, at one time* — you'll have an opportunity to see and compare all the latest developments in roadbuilding equipment and methods. You'll also have a chance to pick up vital information on planning, organization and costs . . . *facts you must have to keep pace with changing conditions in the construction industry.* But remember, this is the first Road Show in 8 years . . . everybody's going to be there . . . so don't put it off! Make *your* plans and reservations NOW!

QUICK FACTS

- A 9-day opportunity to "catch up" on all that's new in roadbuilding.
- 30 football fields of latest postwar equipment — displayed AND OPERATED out-of-doors.
- Down-to-earth discussions by world-famous roadbuilding authorities.
- A chance to meet old friends . . . make new contacts.

45th ANNUAL CONVENTION and INTERNATIONAL ROAD SHOW . . .

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AMERICAN ROAD BUILDERS ASSOCIATION
International Building, Washington 4, D. C., U.S.A.

you get more work out of Mack Trucks

Work done on the job is the one true yardstick of truck value. On tough construction hauls, operators like D. D. Skousen Const. Co., Albuquerque, N. M., find that Mack trucks give full measure—and more—in extra work, enduring reliability and rock-bottom maintenance costs.

because...we put more work into Macks

True Dynamic Crankshaft Balance assures smooth running and prolonged bearing life. This highly sensitive balancing machine determines exact adjustments needed in the counterweights for perfect running balance. A calibrated drilling machine then removes metal from the weights as electrically indicated and the final result is again checked.

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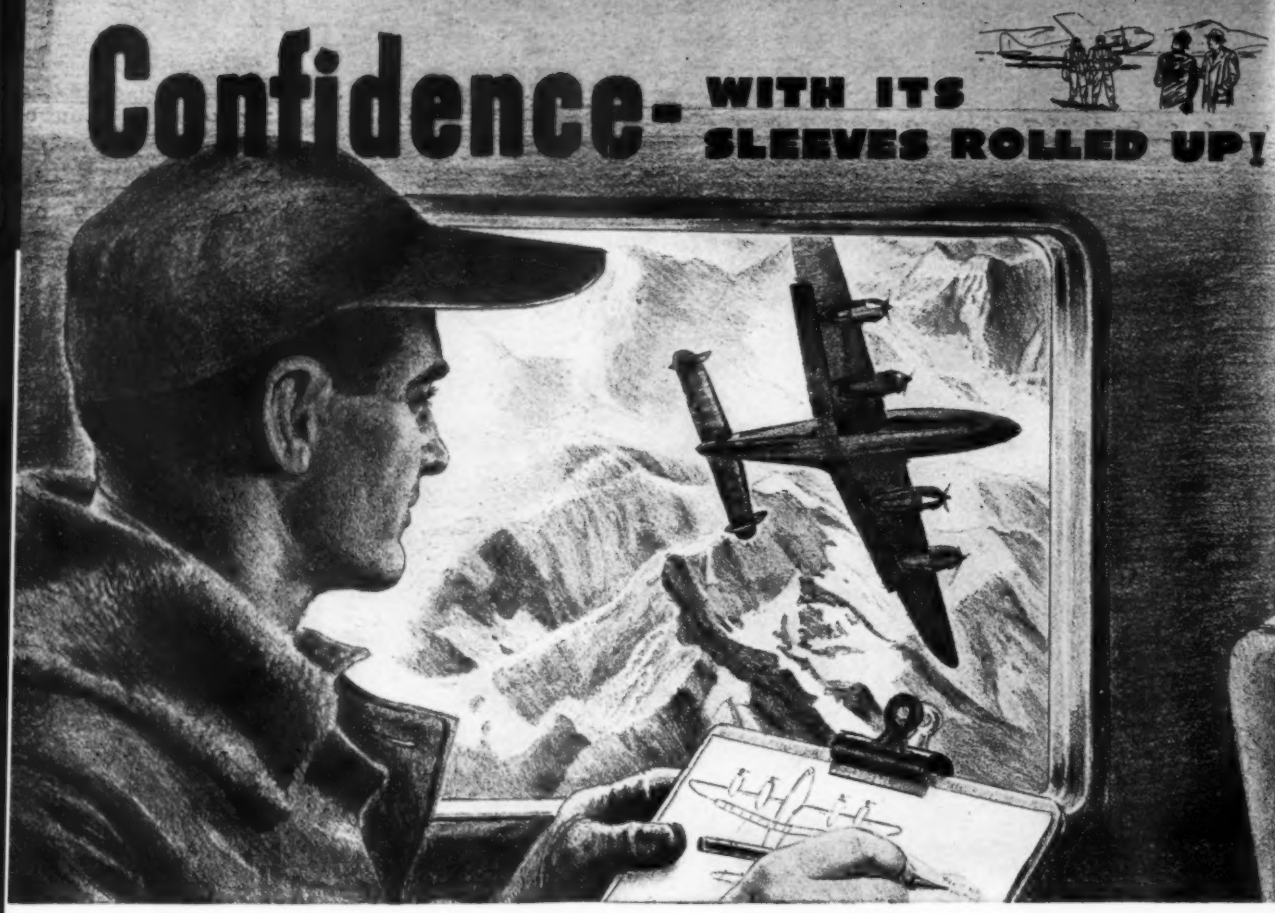
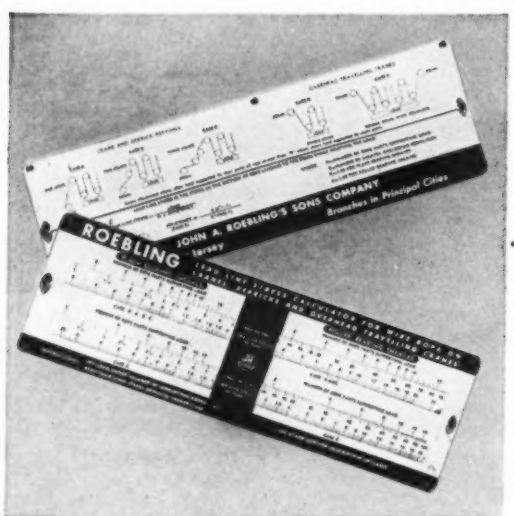
Trucks for Every Purpose

SINCE 1900, AMERICA'S HARDEST-WORKING TRUCK

6220

Confidence- WITH ITS SLEEVES ROLLED UP!





YEAR BY YEAR, planes grow bigger ... faster and safer. Man has unbounded confidence in his ability to build better and better planes. Never satisfied, he experiments and tests tirelessly, and aviation progresses.

With similar vision and confidence, Roebling has been pacemaker in the development and manufacture of products essential to the transportation and other industries. The active, widespread confidence it has won among technical men and operators throughout industry is Roebling's proudest asset. Look to Roebling for continued leadership ... continual improvement in its products and engineering ... continual progress.

WHAT SIZE OF ROPE? HERE'S YOUR ANSWER—FREE

DATA used by Roebling engineers themselves are embodied in this unique "slide rule". It's the Roebling Lead Line Stress Calculator for wire rope ... tells you in a moment the safe and economical size of rope for every load ... gives the right answer for all types of crane, derrick, and overhead traveling crane installations.

Here's information you can accept and act upon with complete confidence ... just as you can specify Roebling "Blue Center" Steel Wire Rope for unsurpassed toughness, dependable reserve strength and the reduction of costly replacement shut-downs. Roebling was America's first wire rope maker, and "Blue Center" Steel Wire Rope is the finest that Roebling knows how to make.

Write for a Roebling Lead Line Stress Calculator — it's free. And let your Roebling Field Man tell you about installation and maintenance practices that prolong wire rope life. Call him at your nearest Roebling branch office.

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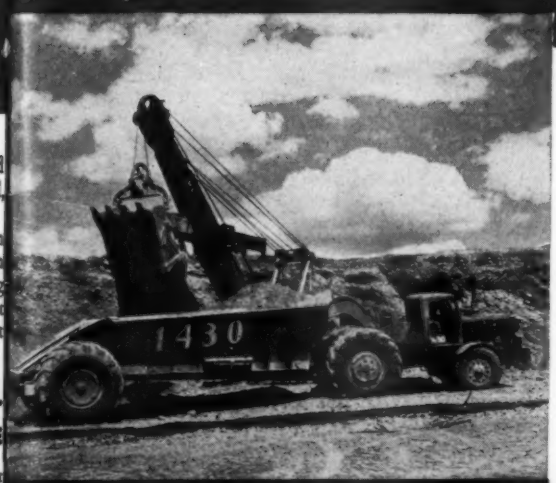
ON POTHOLES DAM...

EUCLIDS are hauling ALL the fill



● Eleven million cubic yards of rock and earth must be moved to complete Potholes Dam near Moses Lake, Washington. This huge earth-fill dam — largest single project in the Columbia Basin Development — is being built by Lytle, Amis and Green Construction Companies.

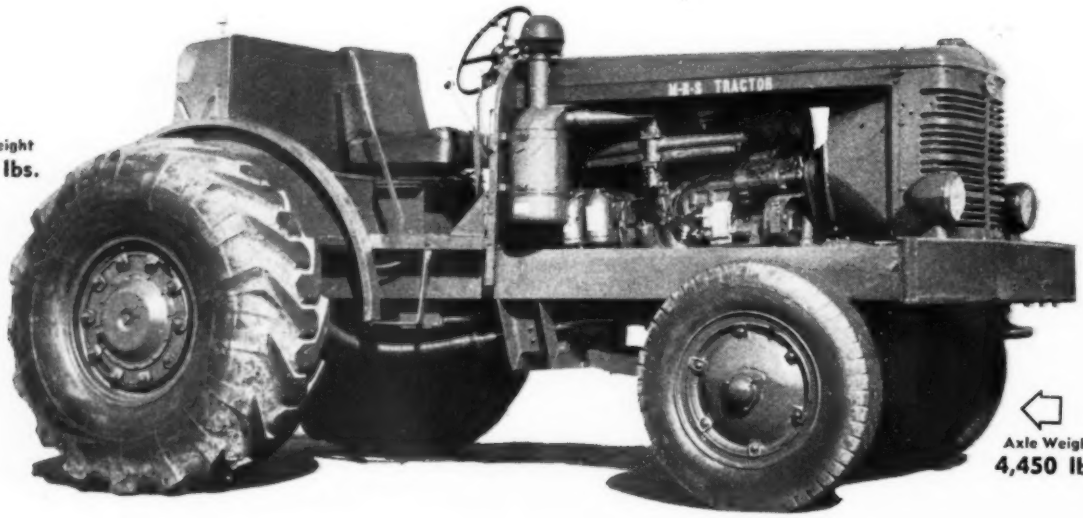
Euclids — 36 of them — are hauling all the yardage at high speed over good haul roads. With loads of approximately 13⅓ bank cubic yards, 28 Bottom-Dumps average a 1.7 mile round trip in less than 14 minutes. Rock from the quarry for rip-rap is moved by a fleet of 8 Rear-Dumps. The "Eucs" are loaded by draglines and shovels ranging from 2½ to 3½ cubic yards.

By hauling big loads at high speeds, Euclids have helped the contractors keep this job ahead of schedule. Rugged construction and dependable performance of Euclid equipment under a wide range of operating conditions hold hauling costs down. That's why it's "Eucs" all the way for hauling fill on Potholes Dam.

Your Euclid Distributor or Representative will be glad to provide complete information and the services of a hauling equipment specialist without obligation.

The EUCLID ROAD MACHINERY Co., Cleveland 17, Ohio

Announcing the M-R-S "125"



Axle Weight
9,250 lbs.

Axle Weight
4,450 lbs.

World's Largest, Most Powerful Rubber-Tired Towing-Type* Tractor!

Furnished as power for the Model 110 and other Mississippi Wagons, or available separately as an all-purpose prime mover

*A "towing-type" wheel tractor is considered to be a tractor having low-pressure drive tires and approximately 70 per cent or more of its total weight on the rear axle, and therefore possessing the tractive ability necessary for all-round drawbar work.

The M-R-S "125" meets the long-felt need of the construction and allied industries for a large, powerful, rubber-tired towing-type tractor . . . a prime mover having the size and power to handle the heaviest jobs, and at the same time providing wheel tractor speed and economy.

With the tremendous drawbar pull exerted by its rugged, 125-horsepower International Diesel engine, the M-R-S "125" is capable of operating large-size equipment of many different kinds: two- and four-wheel scrapers, dozers, rollers, pull-type graders, plows, discs, subsoilers—virtually every type of tractor-powered equipment.

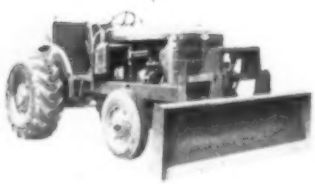
Not only the world's largest and most powerful tractor of its type, the M-R-S "125" also offers the greatest number of optional speed ranges ever made available in any tractor —from a high of 37 m.p.h. for hauling under ideal conditions to a low of 2.08 m.p.h. for maximum tractive effort. Thus it is possible to fit the tractor exactly to its job.

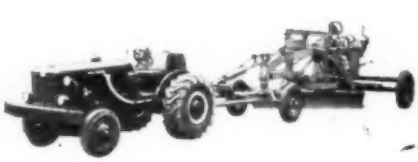
An important feature of the M-R-S "125" is its unsurpassed operator comfort, this being provided by the low-pressure tires and the automobile-type seat equipped with cushions, springs and shock absorbers.

This great new tractor has what it takes to make money for you. For complete information, see your Mississippi Wagon distributor today.

M-R-S MANUFACTURING COMPANY
Flora and Jackson, Mississippi, U. S. A.

Export Sales through INTERNATIONAL HARVESTER EXPORT CO., Chicago 1, Ill.





Announcing the

MODEL 110 MISSISSIPPI WAGON

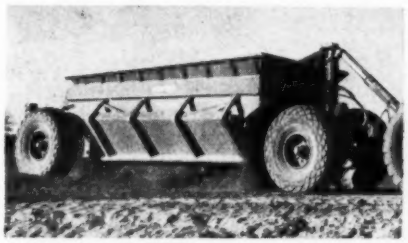
with M-R-S "125" Tractor

SHORT TURNS. The Model 110 will make a complete non-stop turn on a 29-foot fill.

The Model 110 Mississippi Wagon provides a means of hauling big payloads fast, at lowest costs-per-yard.

It combines the M-R-S "125" Tractor (see opposite page) and a heavy-duty, bottom-dump trailer of 17 tons capacity. Tractor and trailer form a completely integrated hauling unit—one which gives you all the famous advantages of Mississippi Wagons but with greater speed, power and capacity than previous models.

Buy the complete unit, if you have a hauling job now. If your hauling comes later, buy the tractor now for other work, add the trailer when needed. Either way, you'll profit by keeping MORE of your investment working MORE of the time!



CLEAN DUMPS. Doors can be opened either to string out the load or dump it all at once.

Only MISSISSIPPI WAGONS Give You All These Important Advantages:

The four-axle construction of Mississippi Wagons is made possible by their patented weight-transfer feature, by means of which weight can be transferred from the trailer-and-payload to the drive wheels of the tractor whenever needed for increased traction. Four-axle construction provides the following advantages:

1. **Puts more tire surface on the ground, resulting in greater flotation on soft earth and sand.**
2. **Relieves the tractor of all trailer weight (except when needed for extra traction in first and second gears), thus prolonging tractor life and cutting repairs to a minimum.**
3. **Permits the use of an all-purpose, TOWING-TYPE tractor having low-pressure drive tires and approximately 70 per cent of its weight on the rear axle, and therefore possessing the tractive ability needed for all-round drawbar work.**
4. **Lower axle-loadings result in less damage to road surfaces.**
5. **Freedom from payload shocks permits higher speeds, increases driver comfort and efficiency.**

★

The complete line of Mississippi Wagons includes five trailer models (8½ to 12 yards struck) and two tractor models (72 and 125 h.p.). For full information and specifications, consult your nearby Mississippi Wagon Distributor.

★ MISSISSIPPI WAGON

★ *The World's Most Modern Hauling Unit*

Repair Your Heavy Equipment

ON THE SPOT

. . . use a P&H Portable Welder — and save maintenance time and money

Moving heavy shovel, tractor, dump wagon, bulldozer, ditcher, crusher, and scraper parts back to a central shop for repair is a costly, time-consuming job.

Much of this expense can be spared — just wheel out a portable P&H Welder and take it wherever your trouble occurs. Weld the break or build up the worn part with P&H electrodes. This mobility is also all-important when repairing or laying oil field pipe lines.

Besides saving you important time and money, P&H portable welders are economical to use. Here are a few noteworthy features:

Low fuel consumption — The P&H idling device automatically regulates engine and generator speeds in accordance with arc time. It reduces wear and fuel costs.

Easy operation — One heat control regulates the welding capacity of the generator. There is no chance for operator confusion.

Peak welding efficiency — The "Visi-matic" scale enables your operator to select instantly the proper welding heat for the electrode being used and the job to be done. This results in better, more uniform welds.

Dependable performance — The P&H generator is similar to those used by thousands of industrial users throughout the country, because of their efficiency and reliability.

Every mining man, quarry operator, or contractor can save himself repair time and money and maintain faster production schedules, by having a P&H portable welder handy. These gasoline-operated units are available in 2 sizes — the WN-200 with a welding service range from 30 to 260 amps, and the WN-300 with a range from 30 to 375 amps. Standard equipment includes 35 feet of welding cable, 30 feet of ground cable, a P&H electrode holder, weldor's helmet with lenses, wire brush, P&H welding manual, and 50 lbs. of P&H electrodes. See your nearest P&H representative or distributor. Write us for bulletins.

WN-300 also available with 4-wheel mounting.

P&H ARC WELDERS
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Announcing a

25% INCREASE IN CAPACITY RATINGS

of TIMKEN® bearings

MAKES POSSIBLE THE USE OF SMALLER BEARINGS, WITH SAVINGS IN SPACE, MATERIALS AND COST—A RESULT OF YEARS OF CONSTANT IMPROVEMENT IN TIMKEN BEARING QUALITY

IN the ten years since the present load capacity ratings of Timken tapered roller bearings were established, Timken bearings have been steadily improved. Improved so much that today the load carrying capacity of Timken bearings is a good *25% greater* than it was 10 years ago!

As a result, The Timken Roller Bearing Company is now able to announce a 25% increase in the load capacity ratings of all Timken bearings—following a careful review of laboratory studies on fatigue life machines over the past ten years, together with close observation of bearing performance in the field.

Permits Use of Smaller Bearings

Now you can safely carry your present bearing loads on smaller size Timken bearings. Reductions in size of shafts and housings are possible. Products can be made more compact—lighter in weight. You have an opportunity to save both on bearing costs and material costs. And this increase in ratings should enable engineers to utilize the advantages of Timken bearings in an even broader variety of applications than has been practicable in the past.

Result of Constant Quality Improvement

This 25% increase in Timken bearing capacity ratings is based on continued improvement in the quality of Timken tapered roller bearings over the past 10 years. It is due to a number of factors, including improved alloy steels made in our own Timken steel mill specifically for anti-friction bearings, better metallurgical control in the processing of this steel, more accurate manufacturing equipment, greatly improved surface finishes, and more accurate inspection methods. That these improvements in Timken bearing quality have resulted in 25% greater load capacity has been conclusively demonstrated by years of exhaustive laboratory and field studies!

New Engineering Journal to Give Facts

A new Timken Engineering Journal is now in preparation which will give complete capacity rating tabulations and will also include new bearings introduced since the last publication. Pending publication of the new Journal you may take full advantage of the 25% capacity increase by multiplying the existing ratings by 1.25.

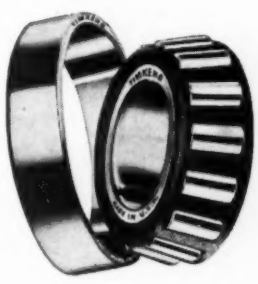
For further assistance in the application of Timken bearings, call upon our field engineers or our Engineering Department.

Timken tapered roller bearings take any combination of radial and thrust loads, hold shafts in rigid alignment, assure precision and minimize friction. The 25% increase in load capacity ratings is the *latest* example of Timken leadership in serving the bearing needs of all industry . . . one more reason why it pays to look for the trade-mark "Timken" on every bearing you use. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◫ AND THRUST ◫ LOADS OR ANY COMBINATION ✳

Coast to Coast

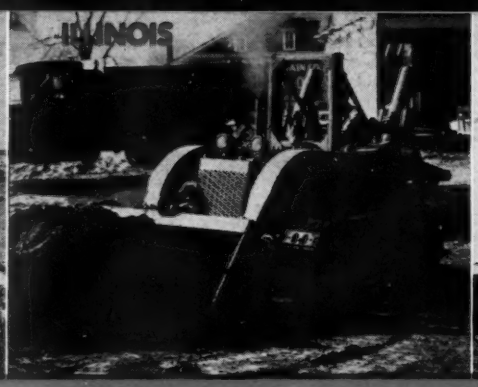
DOZER-SHOVEL

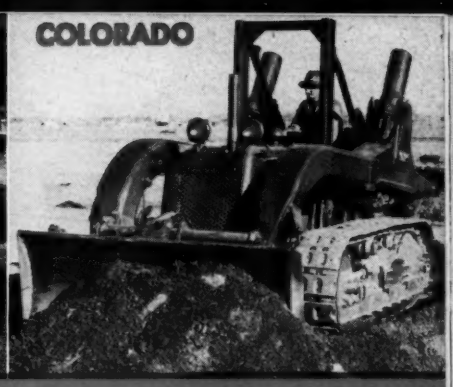
Wherever you are, you don't have to go far to watch a Bucyrus-Erie DOZER-SHOVEL lopping big slices off operating costs! From coast to coast, these versatile units are easily handling an endless lineup of excavating, dirt-moving, and material handling jobs — many of which formerly required larger machines.

Nor do you have to prompt owners and operators to get them talking about the DOZER-SHOVEL features responsible for cost-cutting output. They'll quickly let you know about such things as: smooth, positive hydraulic control that eliminates waste motions; design that "lets the tractor be itself," permitting it to retain its inherent operating char-

For BUCYRUS ERIE Balanced

To Make Your Dirt Moving Pa

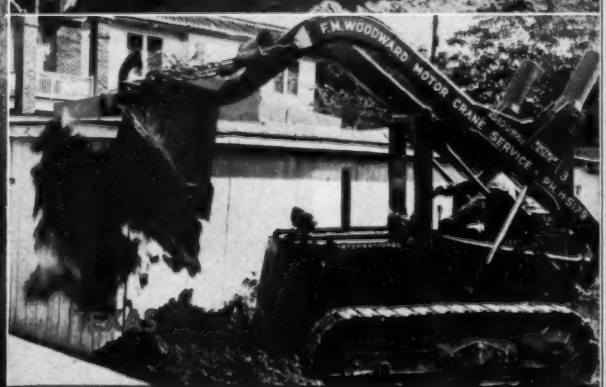




...tures Pay Off in Lower Costs

acteristics; clear visibility, so the operator can see what he's doing; low clearance and exceptional maneuverability, allowing the unit to squeeze through low, narrow openings and work effectively in close quarters; the "quick change" that makes it so easy to use a DOZER-SHOVEL as both shovel and bulldozer; the simple, tough construction that provides strength you can count on in hard going.

To join the throng of owners making the most of these output features, see your International Industrial Tractor Distributor about Bucyrus-Erie DOZER-SHOVELS for T-6, TD-6, T-9, and TD-9 crawler tractors! Bucyrus-Erie Company, South Milwaukee, Wisconsin.



See Your **INTERNATIONAL** Industrial Tractor Distributor

...ractor Equipment

76T47C

...Do it the DOZER-SHOVEL Way!

Barber-Greene

Sensational

NEW CAR UNLOADING TEAM!

unloads car of rock or crushed stone in 45 minutes

B-G HOPPER CAR UNLOADER

Here's a rugged all-material unloader that's completely new in design. The 358 cuts hopper car unloading time as much as 90%—unloads most any bulk product from fine sandy material to large-sized rock aggregates at capacities up to 3 tons per minute—empties a 60-ton car in as little as 45 minutes without jam-ups or delays. There's *positive material flow at all times.* Easily "spotted" in track pit or above rails—really portable—can be towed at normal traffic speeds.

B-G PORTABLE CONVEYOR

The newly designed B-G Model 363 Portable Conveyor is an extremely flexible machine that will prove to be profitable to yards, industrial plants, contractors, etc. Speeds up stockpiling or transfer of material from car or stock pile to trucks. Entirely new in design, the 363 features V belt drives, pneumatic tires, shock absorbers, towing hitch, and a host of *new* improvements. Send for new attractive literature on these two great B-G machines.

BARBER · GREENE COMPANY · AURORA, ILLINOIS

Constant flow Equipment

LOADERS · PERMANENT CONVEYORS · PORTABLE CONVEYORS · COAL MACHINES · BITUMINOUS PLANTS · FINISHERS · DITCHERS

FOR STRIPPING...

Save

10 - 15%

OF EXPLOSIVES COST

In strip mining, metal mining, quarrying, and construction, Hercules Gelamites* and Hercomites† are rapidly replacing older types of explosives. Here are some reasons why:

1. *They save 10% to 15% on explosives costs*
2. *Improved water resistance*
3. *Modern packaging*
4. *Added safety*
5. *Better breakage*

No wonder that Gelamites and Hercomites are by far the most popular Hercules explosives.

HERCULES POWDER COMPANY

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*TRADE-MARK FOR A GROUP OF HERCULES SEMI-GELATIN EXPLOSIVES
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ER8-3R

Chicago Subway's

Working on the Dearborn Street Subway project, the Kenny-McHugh Company, Chicago construction firm, drove 70-ft. interlocking steel sheet piling . . . is now digging an open cut excavation 57 feet wide, 214 feet long, and 61 feet deep in plastic blue clay.

HE deepest open-cut excavation for the Chicago subway and one of the deepest in Chicago's history is going down in the heart of the Loop, on the west side of Clark Street just south of Congress. The work is for a mezzanine station and cross-over on the downtown terminal of the Dearborn Street Subway, an important addition to the city's growing underground transportation system. Now rapidly nearing completion, this portion of the subway will run from Van Buren and Dearborn streets west to the east bank of the Chicago River, in a right-of-way acquired for the Congress Street superhighway.

• Artists' conception of a typical mezzanine station, with double-track subway tubes and loading platform. In addition to a similar station, the Kenny-McHugh construction on the Dearborn Street line also calls for a subway cross-over which will permit switchbacks at the downtown terminal.

Part of $8,000,000 Project

Kenny-McHugh is handling the excavation under a $775,000 sub-contract from the joint venturers, S. A. Healy and Peter Kiewit Sons' Company, prime contractors for the entire $8,000,000 project.

Major items in this sub-contract include moving old foundations from the site of the crossover and station; driving 70-ft. piling; digging an open cut excavation 57 feet wide, 214 feet long, and 61 feet deep; placing reinforced concrete for the subway section.

Time limit for the completion of the job was set to coincide with the underground tunnelling operations of the joint venturers which began August 1, 1947. Work on the sub-contract for station and crossover was initiated August 14. Despite difficult conditions, it is expected that the 28,000-yd. open-cut excavation will meet the concreted tunnel late this June.

A number of problems faced the contractors when they undertook the station and crossover job. In the first place, because the subway will eventually be driven under the Chicago River, the open cut had to be unusually deep (normal Chicago subway depth is 43 feet). The exceptional depth of 61 feet made it necessary to use specially heavy bracing, closely spaced.

Blue plastic clay in the excavation, although easy to dig, is extremely sloppy to work with and likely to shift. Proper driving of piles of sufficient strength was mandatory to prevent the movement of the foundations of adjacent buildings. The buildings themselves are a problem because they surround the job site . . . reduce working space.

Remove Old Foundations

Breaking up and removal of old concrete foundations—the remains of the Buzzell building, a 57-year old structure demolished

Deepest Open Cut

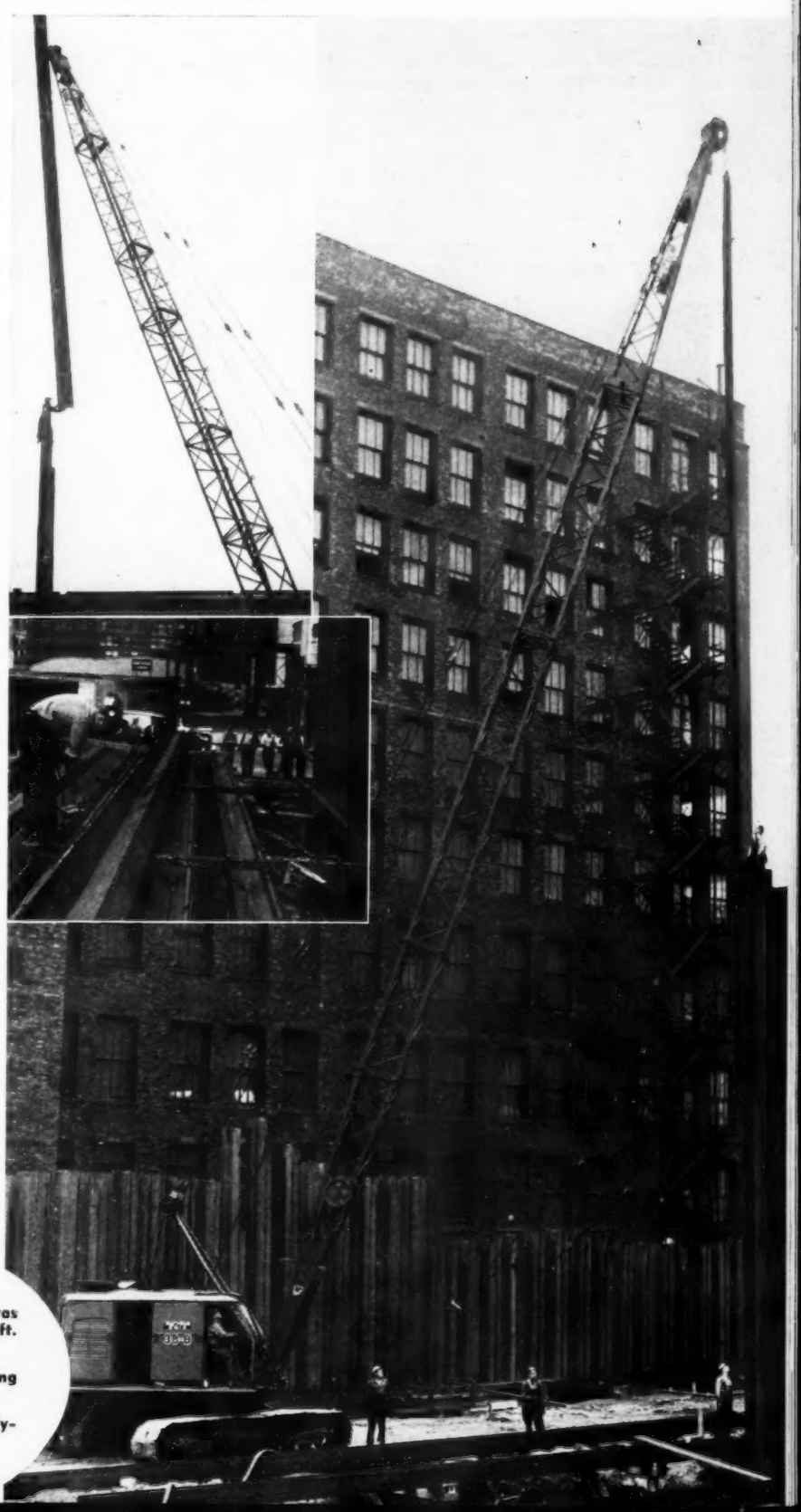
by American Wrecking Company of Chicago—was the first job for Kenny-McHugh. Air tools, powered by an Ingersoll-Rand compressor, were used to shatter the concrete. A Bucyrus-Erie diesel-powered 38-B crane, with a 100 ft. boom—brought in for pile-driving and clamshell excavation—loaded the rubble to trucks.

Removal of the concrete foundation exposed an unusually large number of old wooden piles, about 50 feet long and 6 to 14 inches in diameter, which had to be pulled before the pile-driving could begin. The first attempt to remove the piles with a standard pile extractor proved to be much too time-consuming. The oak and pine piling was so securely embedded, and skin friction was so strong that the extractor, even when running continuously for a half hour or more, couldn't budge some of the old supports.

Use Special Pile Puller

A contractor's ingenuity finally solved the problem. Michael J. McDermott Company's "handy billy," a homemade block-and tackle device with a 14-part line, designed for just such jobs, was borrowed and put to work on the piles (a full description of the "handy billy" is given in the *Field Notes* section of this issue). By multiplying the line pull of the crane, the "handy billy" applied enough lifting force to pull out most of the old piling in short order. That which remained was broken up with air-powered tools during excavation.

The second phase of operations was the placing and driving of 70-ft interlocking steel sheet piling, the longest eyer driven top-to-bottom in Chicago. The Bucyrus-Erie crane was first used to place the piling, and then, equip-



• Right: 70-ft. interlocking sheet steel piling was placed by a Bucyrus-Erie 38-B crane with 100-ft. boom.

• Center: Lubrication of piling prior to placing and driving was done with a spray gun.

• Top: Pile spotter stationed on a previously-placed section aids in interlocking pile.

ped with a pile-driving hammer, it was put to work driving.

Two hammers were used. The piles were put down the first 50 feet with a McKiernan-Terry 9-B-3 hammer, weighing 7,000 lbs. and delivering 8,750-ft. lb. blows. A McKiernan-Terry 11-B-3, weighing 14,000 lbs. and delivering 19,150-ft. lb. blows handled the final 20 feet of driving. The straight setting of all piling on the job is a tribute to the teamwork of men and machines on the Kenny-McHugh project.

Piling used was Carnegie-Illinois MZ-38, measuring 12″ x 18″ x 70′. The heaviest interlocking steel sheet piling available, it is designed to withstand ground pressures up to 5,000 lbs. per sq. ft. when braced according to city specifications. So far, the heaviest ground pressures noted by city engineers have been about 2,300 lbs. per sq. ft.

Spray Gun Lubrication

Lubrication, necessary to make the pile-driving easier, was done with a spray gun instead of by the usual method of greasing with a brush. It was found that spraying was faster, more effective, and required less lubricant than hand-swabbing.

The subway tunnel, running west from Dearborn Street, reached the Kenny-McHugh construction last November. For this reason, the bottoms of the piles at the eastern end of the job site were pre-cut and shaped so they would form a snug-fitting arch when driven around the subway. Piling on the western side was driven full length and will be trimmed by the tunneling crew after the Kenny-McHugh project is completed.

Excavating began just as soon as pile-driving was finished last November. Because of the cramped working conditions and for reasons of economy, it was decided that the job, which totals 28,000 cu. yds., should be divided into two equal parts, 107 feet long and 57 feet wide. The western half was the first to be tackled. When it is completed, right down to the placing of reinforced concrete, work will move on to the eastern half.

• Piling was driven the first 50 feet with a McKiernan-Terry 9-B-3 piledriving hammer. For the final 20 feet, a McKiernan-Terry 11-B-3 was used.

First Excavation Completed

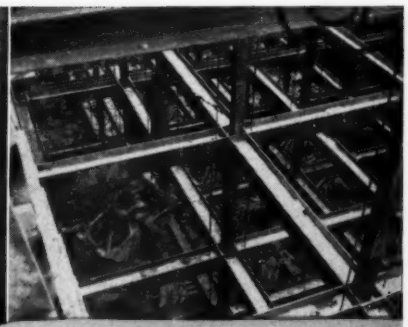
At the time the job was visited late in February, excavation of the western section was within a few feet of ultimate depth. Although cold weather has hampered winter operations, it was expected that this portion of the work would be finished in March.

Excavation is handled from ground level by the Bucyrus-Erie crane, swinging a 1-yd. Owen clamshell bucket from a 65-ft. boom. A Link-Belt Speeder clamshell crane, with 40-ft. boom and ¾-yd. Owen bucket, is also used when conditions are such that two machines are able to work.

To a certain extent, progress is limited by the fact that the crane must periodically be assigned to lifting and placing the steel bracing required in an excavation of this size and depth. Bracing is placed in accordance with plans previously approved by the city, and, in general, bracing sets are installed whenever 2,200 cu. yds. of material are removed from the excavation.

Bracing Procedure

A total of 550 tons of temporary bracing—all wide-flange beams—



• Left: Digging was handled by the Bucyrus-Erie crane, swinging a 1-yd. Owen clamshell bucket from a 65-ft. boom.
• Above: Close spacing of extra-heavy wide-flanged beam bracing called for an unusual amount of skill on the part of the crane operator.
• Below: Hauling was sublet to the Fleming Sexton Company, Chicago. Four 9-yd. Autocars, with Press bodies and Heil hoists were used.

is being used. Wales are 33-in. WF beams. Studs, which are bolted across, are 14-in. WF beams. Spacing averages nine feet vertically and 13 feet laterally. At the end of each predetermined excavating cycle, WF beam sections, of 27-ft. maximum length, are carefully lowered into the excavation where they are snaked into place and bolted. Then the wales are jacked away from the piling with hydraulic jacks and blocked into place.

This pre-stressing puts an initial load on the bracing from inside the coffer dam and thus serves as a safety measure. Strain gauge readings are taken almost continually to determine whether the individual pieces of bracing are carrying equal loads. When the western portion of the job is completed, present bracing will be re-used on the eastern half.

The "stop-and-go" character of the work makes it difficult to set standards of comparison for clamshell operation. When it started on the job, the Bucyrus-Erie crane handled 38 nine-cu. yd. truckloads per 8-hour shift. But as the excavation grew deeper and the weather became colder, this average was reduced to about 25 truckloads per shift.

While the crane works from

"Look—how was I to know she was your girl?"

• Above: A pit crew handled clean-up work inside the excavation. Old wood piling visible in this picture was broken up with air tools.

• Below: Columns of clay around bracing and piling, out of reach of the clamshell bucket, were undercut with air tools and allowed to topple into the excavation.

ground level, a pit crew down inside the excavation handles clean-up work and removes clay from around the piling and bracing where the clamshell bucket cannot reach. The columns of clay are undercut with Gardner-Denver air spades and a power knife and then allowed to topple into the pit, so the clamshell can get at them.

Ordinarily, water is run down between the piling and the clay columns, creating hydraulic pressure which reduces the amount of undercutting required. It was impractical, however, to use water during freezing weather, and air tools alone handled the job. As a safety precaution. one member of the undercutting crew is always assigned to watch the column of clay and warn his fellow workers at the first sign of toppling.

A 315-cfm Ingersoll-Rand compressor, placed at the edge of the excavation, supplies power for air tools via a receiver located at the bottom of the pit. Compressor and receiver are connected by a 2-in. flexible hose 50 feet long.

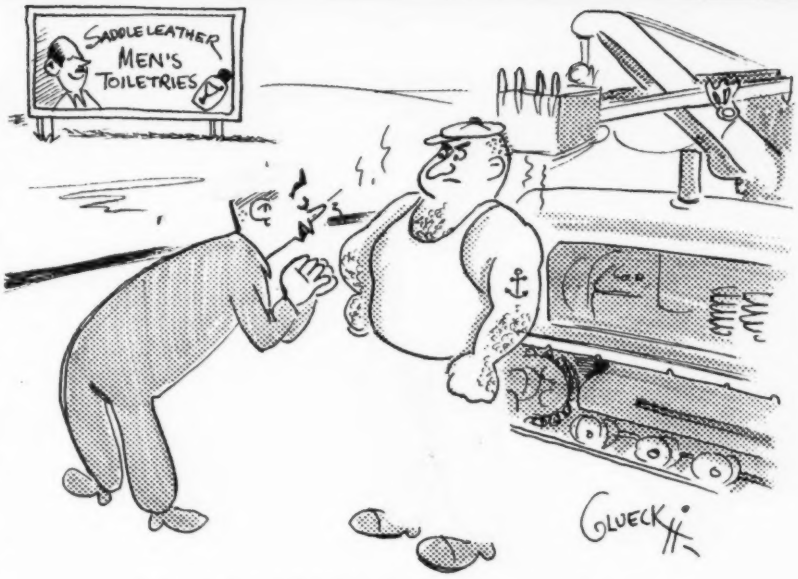
Air winches for the power knife are strategically placed inside the excavation.

Truck-hauling on the Kenny-McHugh job is sublet to the Fleming-Sexton Company of Chicago. Four 9-yd. Autocars, equipped with Press bodies and Heil hoists, haul the material to the Old South Navy Yard at the foot of Randolph Street where it is used to build fill in Lake Michigan.

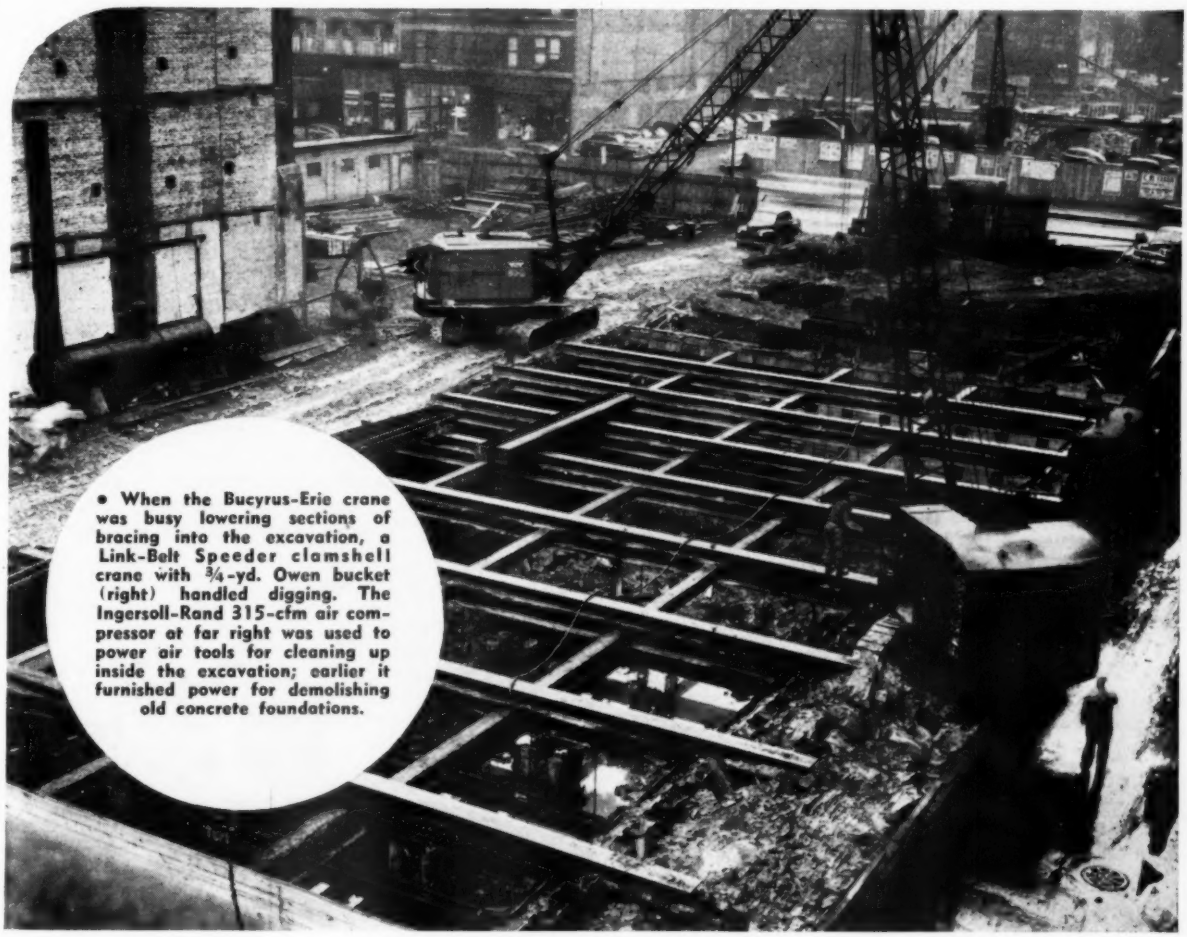
After the placing of 7,000 yds. of reinforced concrete in both halves of the excavation, the Kenny-McHugh part of the job will be completed.

A total of 18 men is being employed on the open cut excavation. John Kenny, sr., president of Kenny-McHugh, is in personal charge of operations. George Kephart is chief project engineer. Other supervisory positions are held by: Alex Guyan, superintendent; Robert Murray, iron work foreman; Joseph Musha, piledriver foreman; and William Lewis, labor foreman. Time keeper is Walter Spietz.

Administrative supervision of the contract for the city is through the Department of Subways and Superhighways, of which V. E. Gunlock is commissioner and Dick Van Gorp is chief subway engineer. Andrew Kinder is checking work at the job site, under the direction of Wilbur Millard, resident engineer.



"What is that delightful out-of-doorsy scent you've got?"



• When the Bucyrus-Erie crane was busy lowering sections of bracing into the excavation, a Link-Belt Speeder clamshell crane with ¾-yd. Owen bucket (right) handled digging. The Ingersoll-Rand 315-cfm air compressor at far right was used to power air tools for cleaning up inside the excavation; earlier it furnished power for demolishing old concrete foundations.

Pre-Season Tractor Maintenance

Preventive maintenance is the best insurance available to tractor owners — who are urged to follow these suggestions to put tractors in top-notch condition for spring work.

by Tractor Div. Service Dept.
Allis-Chalmers Mfg. Co.

THOROUGH engine tune-ups and tractor overhauls are any contractor's best insurance against high operating costs during the coming season. If your equipment is ready to go when the eaves start dripping on the north side of the house you are bound to save time and money later on.

Air Cleaners

The length of satisfactory performance obtained from the pistons, rings, and cylinders of any engine used on a construction job is mostly dependent upon the care given the air cleaners. Remember all dust is abrasive and if it enters the engine it may mean that you will have to pay engine overhaul costs. Here's how to prevent that from happening:

1. Service the pre-cleaners if the engine is equipped with them, being sure to follow the manufacturer's instructions. The pre-cleaners must be tight on the stack as they take a heavy load off the air cleaners.
2. Remove the oil bath air cleaner and clean it thoroughly, swabbing the inlet tube and servicing the oil cup according to manufacturer's instructions. If the cleaner has removable mats, remove and wash them in kerosene or cleaning fluid. After cleaning, allow them to drain. Saturate again with oil and replace.
3. Also clean the passageway to the engine and cement all gaskets and hose connections. Be sure hose and hose clamps are in good condition and, most important, be sure all connections are tight.

Battery

This spring you want your engine to start at the touch of the starter pedal. To make sure it will, your battery must be in good shape. To keep your battery in good operating condition, keep the outside of the battery clean and dry, and keep the terminals free from corrosion. An important thing to remember is to add only distilled water and to add it regularly to the battery to raise the

level 3/8" above the separators. When adding water to the battery it should be done just before using the machine so that the charging received from the generator will mix the water with the electrolyte. Otherwise, in freezing weather, freezing might result.

Brakes

On any machine brakes are one of the most important parts and you will want to be certain you can depend on them. Check thoroughly both the steering and service brakes and, if necessary, reline the bands. Inspect the control mechanism and linkage, freeing any stiff or frozen yokes, pins, or shafts that you may find. Replace any parts such as badly worn linkage. And, lastly, lubricate all linkages and adjust the brakes.

Cooling System

An efficient engine depends upon an efficient cooling system. Check the cooling system of your tractors for leaks and make any necessary repairs to radiator, water pump, hoses and connections. Inspect the thermostat. Then clean and flush the entire system, not forgetting to also clean obstructions and foreign material from the outside of the radiator core. The fan should be checked for loose blades and bearings, and the belt adjusted, installing new belt if needed. Any missing baffles or shrouds should be replaced.

Engine Clutch

To keep your clutch operating smoothly and dependably, it must have proper maintenance. Now is the time to inspect the control linkage and if you find any stiff or frozen yokes, pins, or shafts, free them. Check release bearing for wear. If amount of possible adjustment indicates clutch is nearly worn out, replace driven plate or facing and other worn or broken parts, then adjust clutch to the proper amount of free travel or lever pull according to the manufacturer's recommendations.

Engine

The very heart of your tractor is its engine, and proper care will keep it running. Start and run the engine long enough to get the oil warm. Then check the oil pressure, valve adjustment, injector,

spark plug, compression, high and low idle speeds, keeping an eye open for oil leaks at gaskets and seals. Clean the carbon. Recondition the valves and seats. Overhaul the injector and fuel system, carburetor, ignition and electrical system, if needed. If oil pressure and compression are low, an engine overhaul is probably necessary.

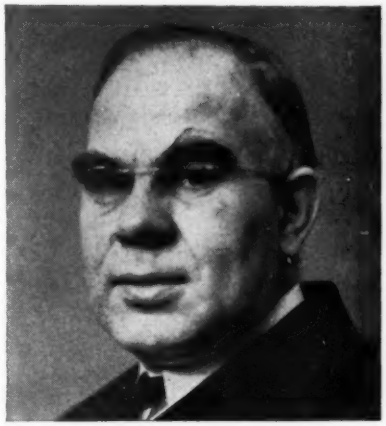
Remove and clean the crankcase breathers, for if the cap is allowed to become clogged with dust, crankcase ventilation will be shut off. This increases condensation in the crankcase and causes excessive crankcase pressure. Most breather caps contain a filtering mat that must be kept moist with crankcase oil. Remove and wash the cap in kerosene or cleaning fluid. After the cleaning fluid has drained off, dip the cap in crankcase oil. Shake off the excess oil and reinstall.

Steering Clutches

The first thing to do on the steering clutches is to inspect them for the amount of adjustment remaining. If all adjustment is used up, overhaul the steering clutches. Next, check condition of release bearings. Then if clutches are greasy, wash them using a non-inflammable cleaning fluid, as follows:

1. First install plugs in the steering clutch compartment drain holes. Pour about three gallons of cleaning fluid into each compartment.
2. Run the tractor back and forth for several minutes without releasing the steering clutches. Then drain each compartment.
3. Once again replace plugs and pour three gallons of cleaning fluid into each compartment. Operate the tractor without load for about five minutes, releasing both clutches as often as possible. Then drain the compartments.
4. The release bearings must be lubricated immediately after the steering clutches are washed, as all lubricant will have been washed from them. Operate with a light load until clutches are thoroughly dry to prevent excessive slippage due to solvent on disks.

F. Carl Ruhloff



The excavating industry lost one of its leading job survey and setup engineers February 12 with the death of F. Carl Ruhloff in his home in South Milwaukee, Wis. Mr. Ruhloff, who had been associated with the Bucyrus-Erie Company since 1905, died after a series of heart attacks.

Carl was born in 1888, in Europe, the son of an iron worker. His family came to the United States in 1892 and Carl attended schools in Milwaukee, graduated in mechanical engineering from the University of Wisconsin in 1912. He performed drafting and shop work summers for Bucyrus-Erie Company, South Milwaukee, while attending school, and became a member of the Company's engineering department in 1912.

One of the first job survey engineers in the excavating industry, Mr. Ruhloff commenced this work in 1922, and from 1926 until his death he was setup engineer for the Bucyrus-Erie sales department. He was widely known for his ability in determining sizes and types of excavators and production cost figures for excavating projects, and leaves a great number of good friends throughout the industry.

Mr. Ruhloff, an active inventor in the heavy excavating machinery field, was admitted to the patent bar in 1925. He was a member of the patent firm of Hoar, Ruhloff and Arnaud, which handled Bucyrus-Erie patent work exclusively. He was author of a number of technical articles—among the most recent were sections on excavating for the National Encyclopedia, soon to be published in New York City.

In spite of the demands of his work, which took him all over North America and into France, England and Germany, Carl was active in professional societies, including the American Society of Mechanical Engineers. He was a member of the University Club of Milwaukee and the First Congregational Church, South Milwaukee. His hobby was gardening.

Mr. Ruhloff is survived by his widow, Eleanor; two sons, Carl P. and Robert; a daughter, Marcia; and three grandchildren. His many friends—both in and outside the industry—will miss Carl Ruhloff's cheerful, straightforward manner, his unquestioned knowledge and ability.

Tracks, Trucks, Wheels

If the track pin and bushing are considerably worn but not cracked, turn them. At the same time, change the sprockets from one side of the tractor to the other. If the bushings are worn out or cracked and the pins badly worn, install new ones. It is a good idea to install new sprockets if new track pins and bushings have been installed. Otherwise the track may be out of pitch with the worn sprocket. Remember to tighten the track shoe bolts and adjust the tracks, Truck wheels, track idlers and support rollers should be inspected for worn flanges, end play, and up and down motion. Overhaul or replace if necessary. Tighten mounting bolts and lubricate according to manufacturer's recommendation.

Transmission, Drive, Differentials

A thorough inspection should be made for worn, loose or broken gears and bearings. Make any replacements that are necessary.

(Continued on page 34)

NEW "Low Down" AT LOGAN

A 2½-yd. shovel worked down a 30-percent grade through granite for five years to help convert Granite Rock Company's, Logan, California, quarry to more efficient low-level operation.

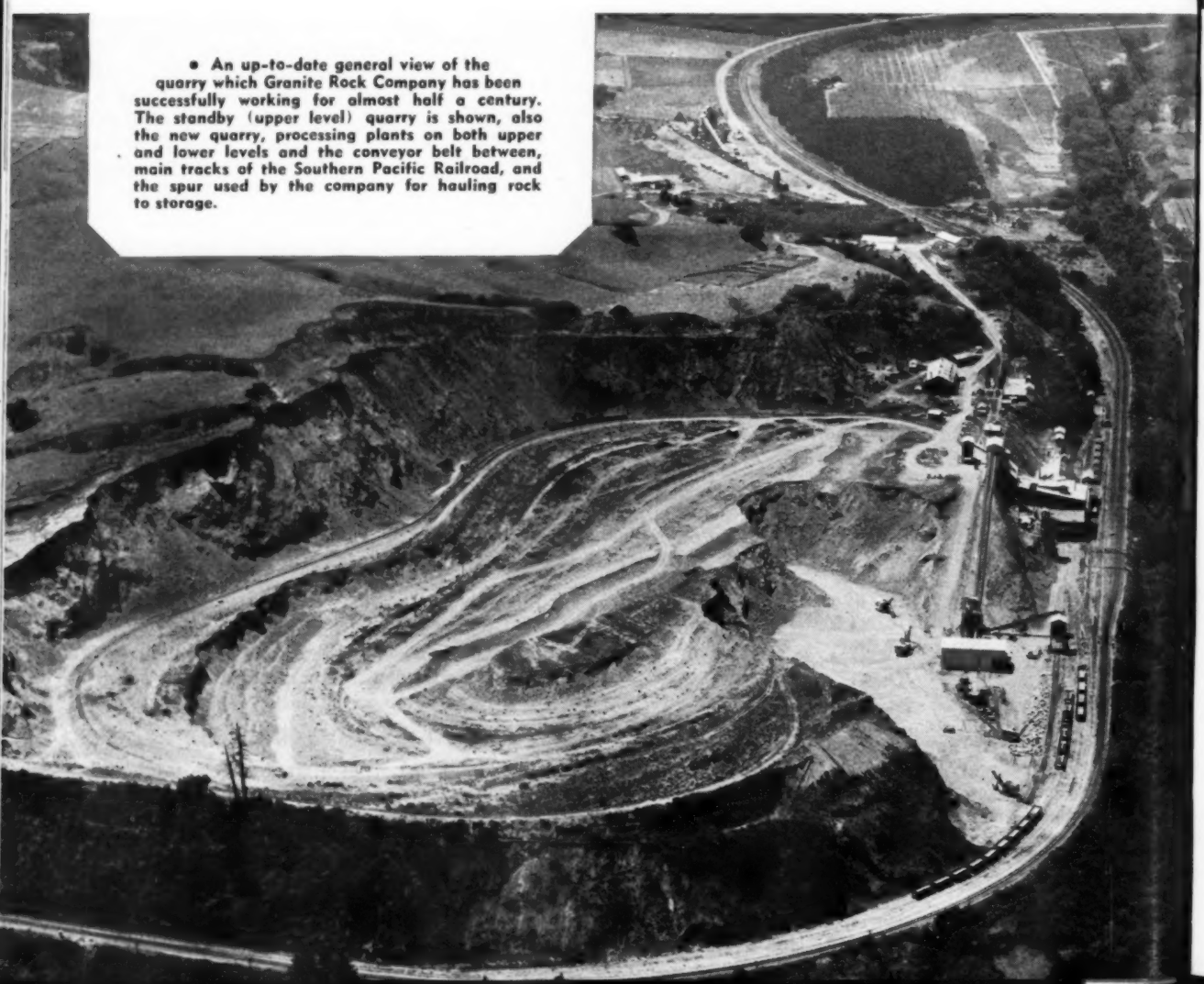
by M. R. Resnick

FORTY-EIGHT years ago, Granite Rock Company founders A. R. Wilson and W. R. Porter chose a sheer granite face rising about 250 feet above the Southern Pacific railroad tracks, near Watsonville, as a likely quarry site. (Watsonville is some four miles inland from California's famous Monterey coast). Operations in those days were of the pick-and-shovel, 100-percent manpower variety.

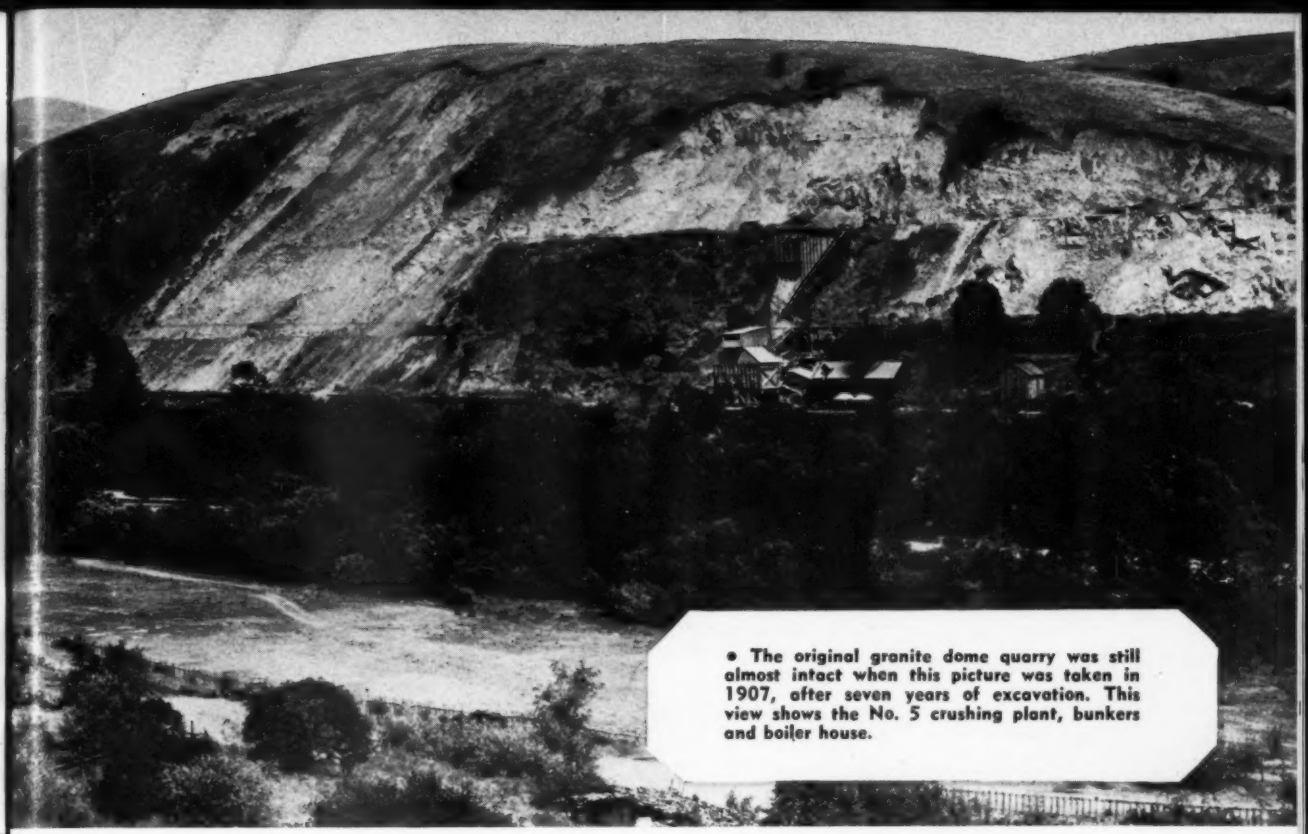
Men barred the rock down from the sides of the sloping granite dome, whence it fell beside the Southern Pacific tracks below. The larger pieces of rock were broken by sledge hammers to a maximum of about six inches. Then they were hand-loaded on flat cars and shipped to buyers. The daily output averages five 35-ton cars — 171/2 tons an hour produced by about 15 men. For these 12 tons of output, a man was paid $1.75 for a 10 hour day.

By 1940, the scene at Logan had changed considerably. Picks and shovels and manpower had been replaced by modern drilling equipment, electric shovels, locomotive hauling, and a crushing plant, as well as a greatly augmented crew. Production had zoomed. But the years of excavation had changed the physical scene too.

The old quarry face had diminished considerably in height, and drilling and blasting costs were beginning to rise. The availability of large jaw-crushing machinery made no longer economical the existing method of setting out oversize rock during quarry car loading and then reducing these by bulldozing, to say nothing of



• An up-to-date general view of the quarry which Granite Rock Company has been successfully working for almost half a century. The standby (upper level) quarry is shown, also the new quarry, processing plants on both upper and lower levels and the conveyor belt between, main tracks of the Southern Pacific Railroad, and the spur used by the company for hauling rock to storage.



• The original granite dome quarry was still almost intact when this picture was taken in 1907, after seven years of excavation. This view shows the No. 5 crushing plant, bunkers and boiler house.

the delays due to the manipulation or removal of large rock at the primary gyratory crushers.

Simplify, Speed Up, Economize

Company management realized that they could simplify, speed up and economize all at once, if they could establish a new quarry down at rail level. A new, higher quarry face would reduce drilling and blasting costs. Creation of a level area beside the tracks would make room for the desired large jaw-crushing plant.

With sufficient floor area, all operations except secondary crushing could take place on one level, eventually removing the necessity for the large hauling distances to stock piles located over 3,500 feet away from the old crushing plant. Quarry, primary processing and commercial car loading could all be located close together, on a single level.

A method was worked out whereby the new low-level quarry might be established without interrupting regular quarry or plant operations, and using normal operating equipment. The problem was to cut through from the old quarry floor which formed a steep-sided plateau 100 feet above the railroad tracks. They had to avoid endangering the men and property of the Southern Pacific Company and the Granite Rock Company by the blasting operations and falling rock. It was also necessary to utilize every bit of rock excavated during the descent and levelling operations by sending it through the existing plant for processing and sale.

Down 30 Per Cent Grade

It was decided to dig an 18-degree incline within the plateau until they reached the elevation of the lower quarry. The next step was to hole through the rib of the plateau which was left lying between the bottom of the incline and the Southern Pacific tracks. On the slope, a track was constructed to haul cars containing excavated rock to the crushing plant above.

Excavation was begun in July 1940. It was done in three lifts. Excavation of the jaw-crusher pit was handled separately. Vertical drill hole depths were computed for blasting during the descent. But most of the drilling was done by loading "snake holes" set in at the toe of the face and slightly steeper than the incline.

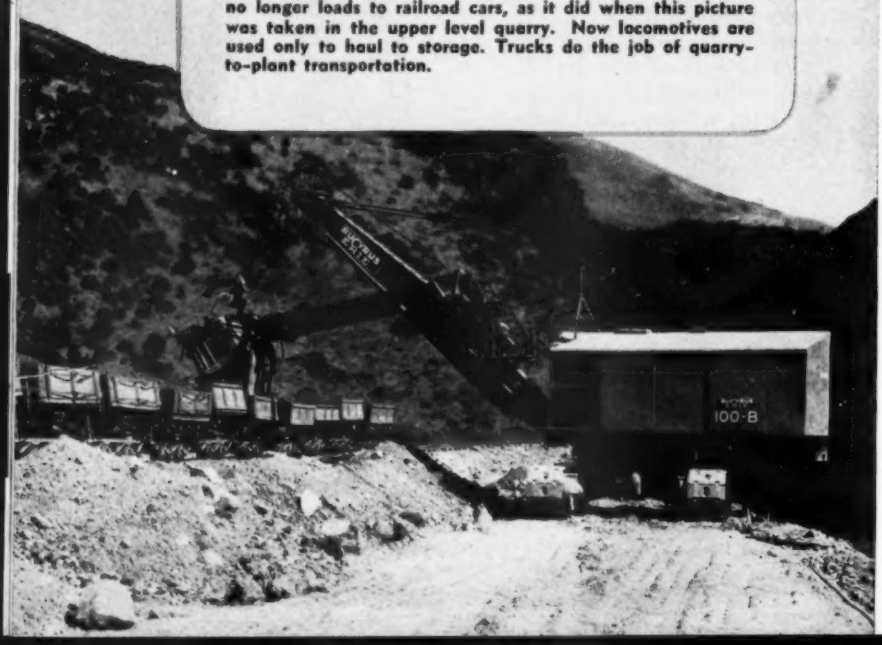
The mainstay of the excavating operation was a 75-B Bucyrus-Erie shovel with Ward-Leonard control. The machine was required to load rock on a grade of about 30 per cent—difficult service which sometimes required the shovel almost to "stand on its head." In making the main, pilot cut for each of the three lifts, the

• Royal E. Fowle, general manager of the Granite Rock Company.

• In the good old "handle-bar-mustache" days, men barred down rock from the sides of the granite dome and loaded cars by hand.

• Below: These horse-drawn Western side-dump cars replaced the hand-pushed cars originally used.

• Below: A quick jump to 1940. The Bucyrus-Erie 100-B no longer loads to railroad cars, as it did when this picture was taken in the upper level quarry. Now locomotives are used only to haul to storage. Trucks do the job of quarry-to-plant transportation.



shovel had to stand nose down the steep grade, load, and swing an average of 180 degrees to the two 5-cu. yd. cars which were placed directly behind it.

The pilot cut was then widened by throwing the track to either side of the center line. By an average 90-degree swing, the rock cars were then side loaded. Before blasting, and at the end of the day, the shovel had to be backed up the grade. The physical strain on the shovel operator can well be imagined. He was given some degree of ease by using the best bucket-type seat.

Dump Car Hauling

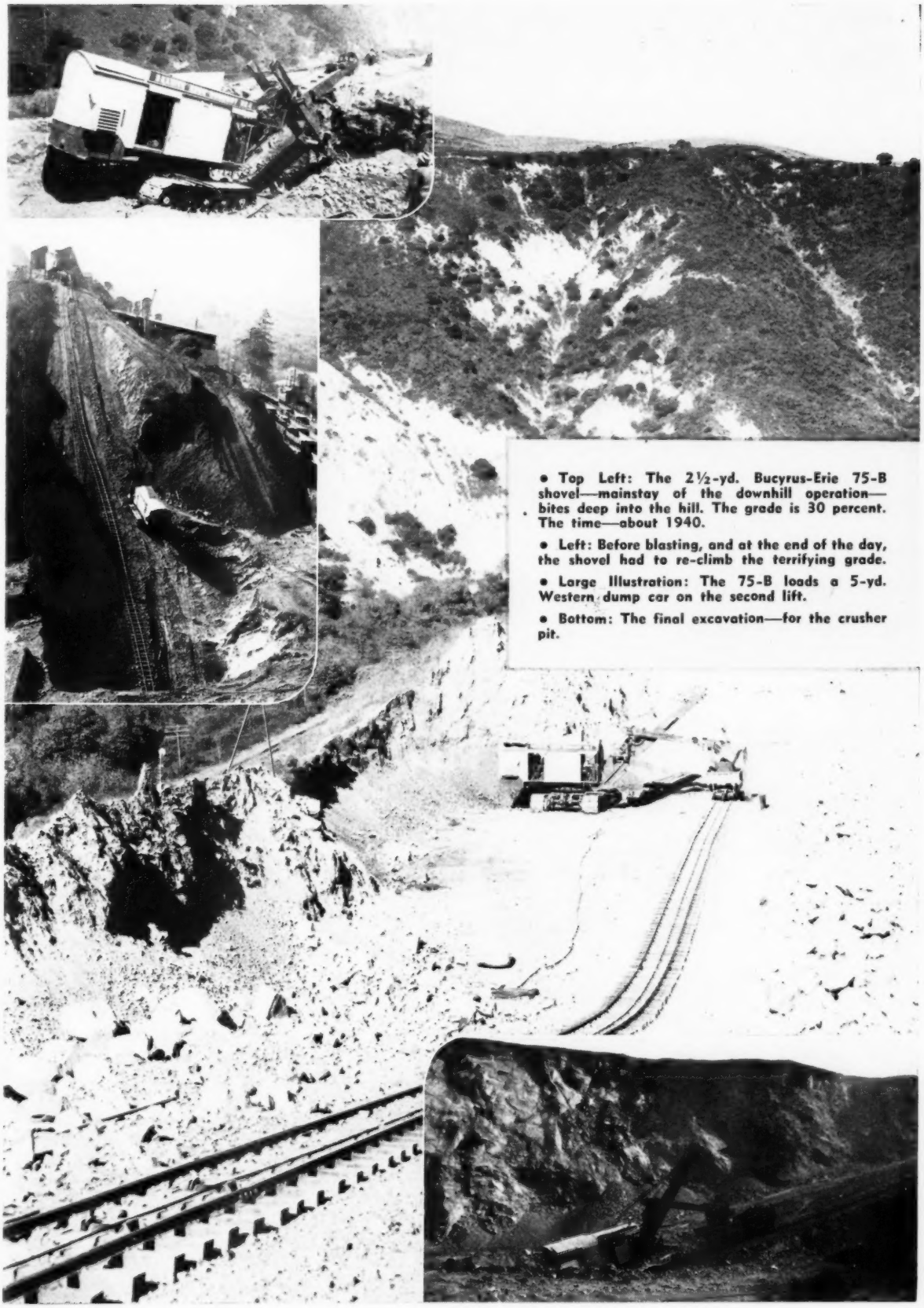
Hauling of the excavated material to the old plant was done by a Meade-Morrison 365-hp double-drum hoist, for main and back line, pulling two 5-cu. yd. Western dump cars up the slope to the upper quarry and to the same rock chutes used by the locomotive-hauled rock cars during normal upper quarry operations. These cars operated on a circular track, except for a length of tangent for car dumping at the rock chutes.

The track to the lower level was a prolongation of this tangent, making it necessary for a switch and a frog to enter at the circular track. Since the cable pulling the two cars could not be allowed to interfere with normal locomotive-drawn traffic, it was placed under the outside rail of the curve near the hoist house, then down the center line of the tangent and through the rail close to the frog near the incline.

Control of Cars

While material was being hauled, a backline was attached to the rear car as it reached the top of the incline and entered the flat grade to the chutes. After dumping, the cars were returned to the top of the incline by the backline, which was them unhooked. The cars returned to the pit by gravity, controlled by the hoist line.

Excessive backline slack and whip was prevented by running the cable in covered troughs placed between supporting sheaves. When slack, the cable was supported by this trough. It cleared the trough bottom by one inch when loaded. In this man-

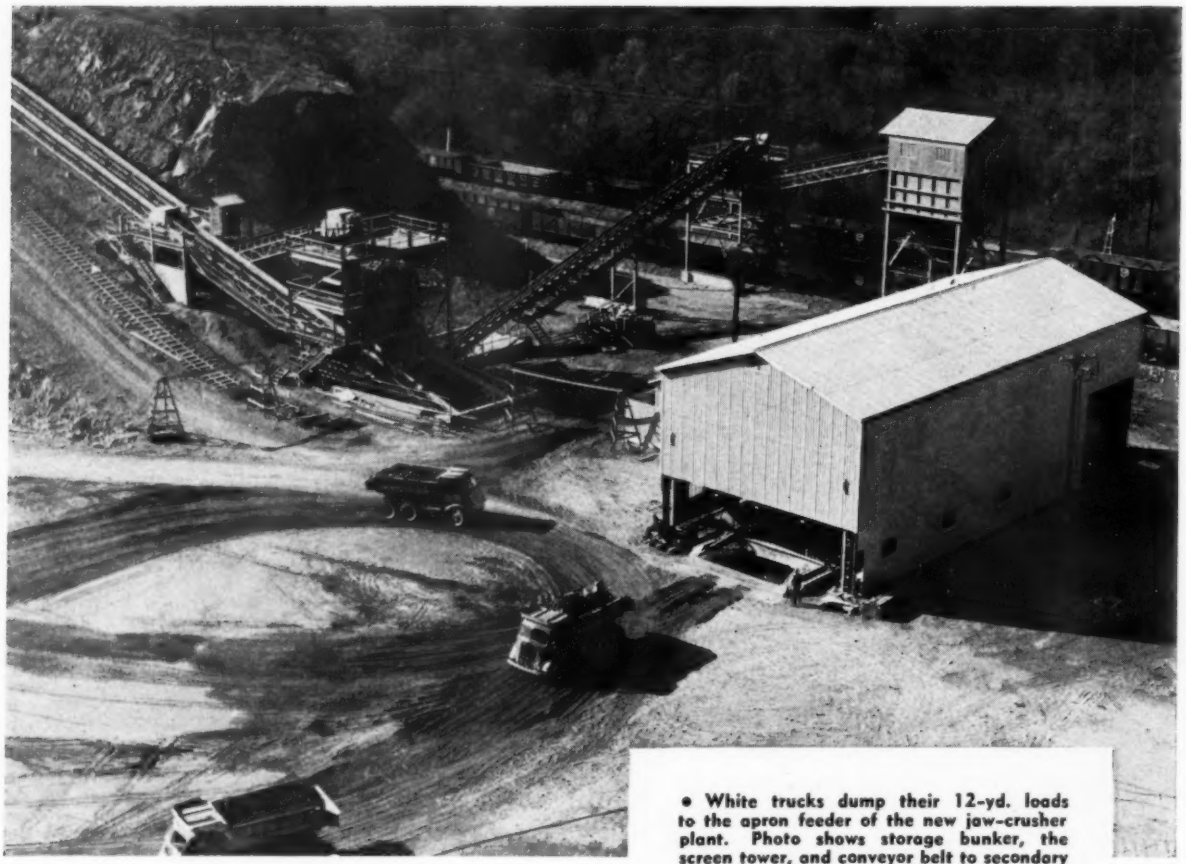


• **Top Left: The 2½-yd. Bucyrus-Erie 75-B shovel—mainstay of the downhill operation—bites deep into the hill. The grade is 30 percent. The time—about 1940.**

• **Left: Before blasting, and at the end of the day, the shovel had to re-climb the terrifying grade.**

• **Large Illustration: The 75-B loads a 5-yd. Western dump car on the second lift.**

• **Bottom: The final excavation—for the crusher pit.**



• White trucks dump their 12-yd. loads to the apron feeder of the new jaw-crusher plant. Photo shows storage bunker, the screen tower, and conveyor belt to secondary facilities at the old upper level plant.

ner, trough and cable wear were minimized.

Water-Tight Foundation

Following excavation, the foundation for the 48 x 60-in. jaw crusher plant, containing about 225 cu. yds. of reinforced concrete, was poured. A heavy copper sheet was placed horizontally in and around the crusher base to form a water-tight accordion membrane within the crushing plant foundation, which serves as the floor of a 50-ft. deep concrete pit. The new crusher plant, a steel frame structure, was placed inside this pit and has been kept independent of the concrete structure wherever possible.

It took four years and ten months to complete these excavations. It was not until 11 months after that, in April 1946, that the new jaw crushing plant was put in operation and upper quarry operations finally abandoned. However, the upper quarry remains in standby condition, and former quarry operations could be resumed within 24 hours, in case of abnormal demand. On continuing permanent duty are the upper level plant facilities, now performing secondary crushing, screening and other operations.

"Pre-Crushing" Phenomenon

The present operation involves, first, drilling and blasting, but only on a comparatively small scale. This is true not only because of the higher 100-ft. face of the new low-level quarry, but also because of a fortunate natural phenomenon in this location. About 20 million years ago there was a period of great folding and faulting in the area where the quarry is located.

These earth upheavals folded, broke, crushed and lifted the granite. The quarry is located directly on the so-called San Andreas fault, which also passes through the city of San Francisco and which was responsible for such famous earthquakes as that of 1906. Action along the fault served further to crush the granite which is the product of this quarry.

All this pre-crushing by nature transforms what might have been prohibitive powder costs into fairly low costs. All that is necessary is to use toe holes or snake holes at the base of the quarry face. These are put in by a Gardner-Denver wagon drill to a slope depth of about 24 feet. All holes are sprung so that they will contain a charge of from 5 to 8 boxes of 40-per cent Nitro Starch Trojan powder for normal shots.

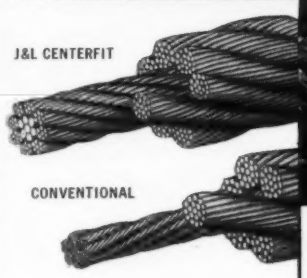
Several holes are usually fired at once, thus bringing down the quarry face in sizes that can be handled by the power shovels. Nitroglycerine gelatine powder is used when water is encountered. Usually a four man crew is used in drilling and blasting, but since these operations are not continu-

(Continued on page 54)

66% Longer Service Life with NEW J&L Center Fit Wire Rope

J&L STEEL

All 17 strands in CenterFit are laid up in a single closing operation. Note all strands run in the same direction. Outside strands fit snugly into valleys between inside strands and eliminate crossing of strands as in conventional design. This prevents internal nicking—gives longer wear. Eight outside strands, CenterFit design, give more steel, less void space, greater flexibility, easier handling.



. . . Sets performance record of 15 weeks continuous service on this fast shovel

When a CenterFit wire rope hoisting line on one of the fastest power shovels in the industry recently completed 15 weeks of continuous service, it set a performance record that will interest every wire rope user.

Here are the facts:

OPERATION—Removing overburden at strip coal mine near McDonald, Pa.

CONTRACTOR—Allegheny Contracting Company, Pittsburgh, Pa.

SHOVEL—Manitowoc Speedshovel, making three one-quarter turn passes per minute during operation, each pass to the fullest hoist and "rack-out" of the shovel.

DAILY PERFORMANCE—5000 cubic yards of rock, shale and dirt each 24 hours.

TOTAL PERFORMANCE—236,000 tons of shot-blasted overburden.

SERVICE LIFE OF HOISTING LINE—15 weeks, compared to usual 8 or 9 weeks—or *66% longer*.

Because it has proved so satisfactory in performance, Allegheny Contracting Company now uses J&L *CenterFit* on a variety of equipment, from bulldozers to drag lines, throughout its widespread mining and excavating operations in Western Pennsylvania.

CenterFit, an exclusive product developed by Jones & Laughlin, is a 17-strand wire rope of advanced design with exceptional performance characteristics. CenterFit with new Bronz-Lube wire rope lubricant, permits 20% faster operating speeds, shows a 25% saving on sheave and drum maintenance, and gives up to ⅓ longer service life! *Yet CenterFit costs no more than ordinary wire rope!*

Your local J&L distributor or J&L warehouse is now stocked with most sizes of this new and better wire rope, that gives longer service at lower cost.

Send for descriptive literature giving complete technical information about CenterFit—and for free Wire Rope Service Record Cards in convenient plastic holder. Address Jones & Laughlin Steel Corporation, Room 429, 311 Ross Street, Pittsburgh, Pa.

JONES & LAUGHLIN STEEL CORPORATION

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INTERNATIONAL DIESEL CRAWLERS

Increased-horsepower engines now give these heavy-duty Diesel crawlers new power and performance values. Smoother, cooler operation and greater lugging ability step up their work capacity to a new high!

New illustrated folders, in color, describing these tractors are now available. Write to International Harvester for *Form No. A-92-LL* describing the TD-14 or if you want the facts on the International TD-18 ask for *Form No. A-93-LL.*

The 4-cylinder TD-14 now provides 57 drawbar horsepower at 1400 r.p.m.

The 6-cylinder TD-18 delivers 80½ drawbar horsepower at 1300 r.p.m.

Now is the time to see your International Industrial Power Distributor for your tractor, power unit and equipment needs. More and more, each year, you will find it *good business* to *standardize* on *International.*

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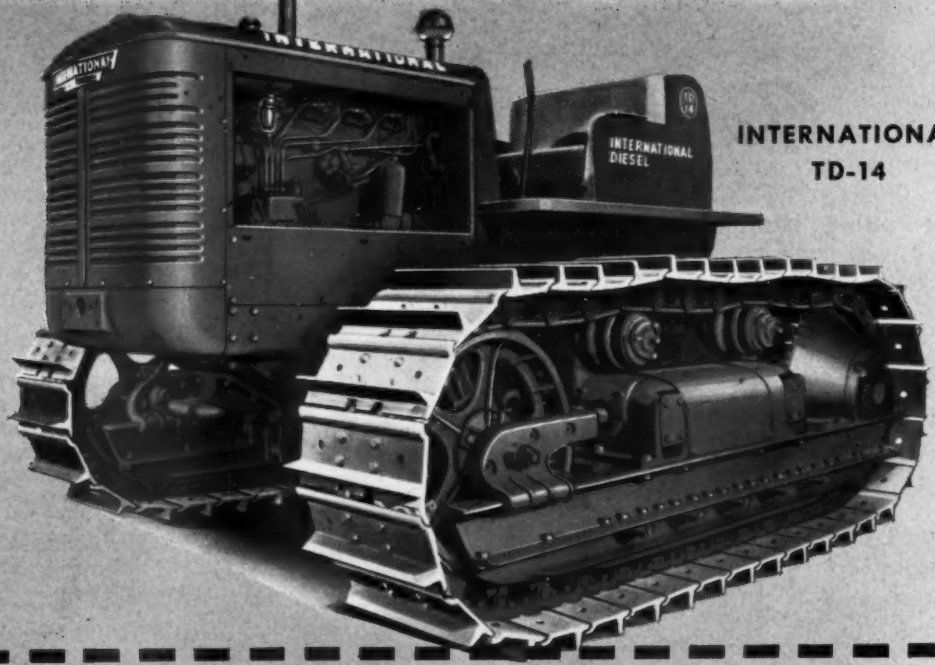
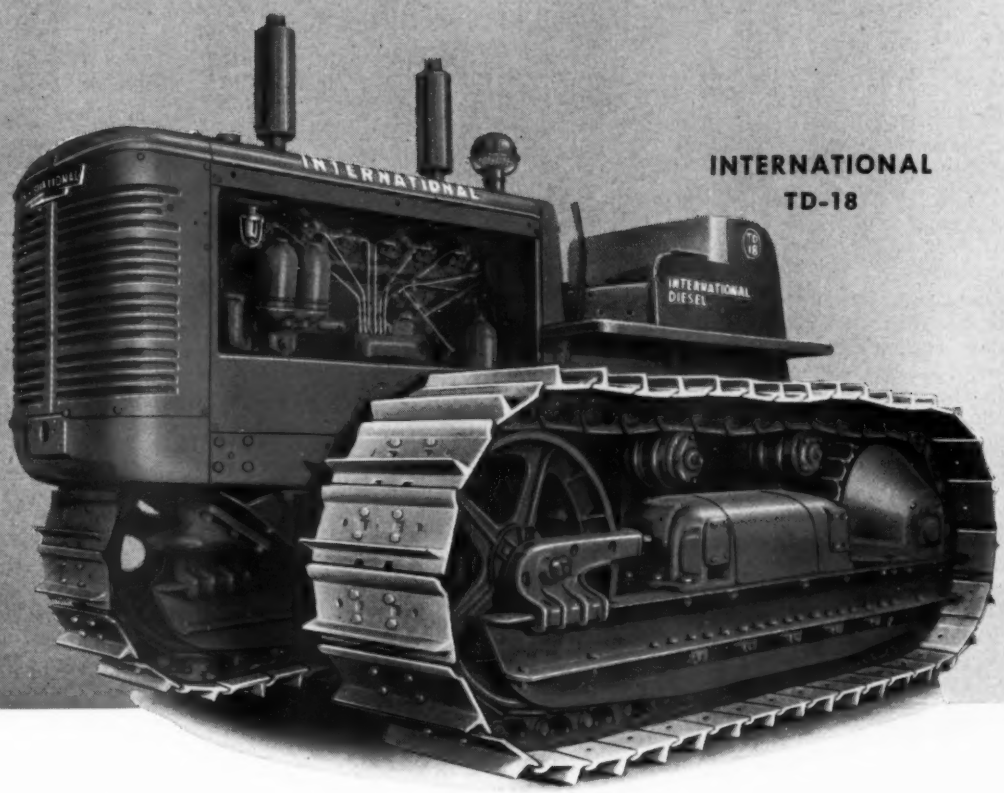


INTERNATIONAL
TD-14



INTERNATIONAL
TD-18

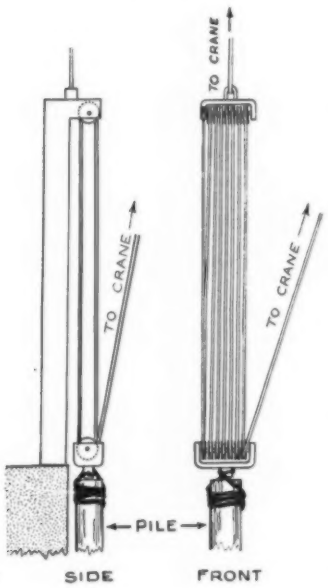
INTERNATIONAL HARVESTER

Industrial Power

Field NOTES

Pile-Pulling "Handy Billy"

A "handy billy" was used by Kenny-McHugh Company for pile-pulling on their Chicago Subway contract (Story on page 18).



An excellent tool for the removal of such obstructions as old piles, the "handy billy" is easy to make . . . can be constructed right on the job. By multiplying the line pull of a crane, the unit helps create enough lifting force to pull the most stubborn piles in short order.

A typical "handy billy," as shown in the sketch, is of steel beam construction, has two 7-sheave blocks and a 14-part line. Two lines connect the crane to the tool—one, the auxiliary hoist line, serves merely to hold the steel beam erect; the other, the main hoist line, leads from the last sheave of the bottom block and supplies lifting power.

In operation, the "handy billy" is set on a piece of concrete or some other solid base. The bottom block is securely fastened to the pile to be removed, and the crane takes care of the rest.

Fast Plumb Bob Setting

When a plumb bob is used from a height greater than 30 feet, it ordinarily takes a while to come to rest. Even when a heavy bob is suspended by wire, it will swing in a circle about the plumb point.

You can easily do away with the time-wasting swing by letting the bob down into a vessel of oil where it will come to rest in a hurry. A point can be established at the plumb line, a few feet above the bob. The vessel is then withdrawn, and, with the line secured at this point, the bob will indicate the true point desired.

Vollie Tripp

Cement Pouring Method

On a recent building job, the plans called for concrete footings, foundation walls, and floor to be poured all in one operation. The fill under the floor was to be of sand. The problem was to make the fill stand up long enough for the concrete to be poured against it.

This is the way it was solved: The sand, actually fine silt, was made wet and settled inside the main outside form. A trench was then dug out, a short section at a time. The sides of the trench were lightly sprinkled, and dry cement was thrown against them. Then, a fine mist was turned on the cement.

The coating of cement kept the silt from drying out, and after it set, it formed a thin hard crust on the walls. This made possible pouring in one operation, without the necessity of laying boards against the sand wall.

John R. Marsh

Piston Salvage Method

Pistons need not be discarded because of wear. A welding shop can salvage them at a profit. Worn pistons that have been surfaced with welding rod and machined to finished dimensions cost little to reclaim, and can give many years of service.

Bronze welding rod should be used for the bronze-surfacing operation. Work is carried out in two stages. First, the diameter of the piston is ground down to 1/16" less than the cylinder bore. Then, the walls are built up to 1/8" with bronze welding rod and later machined to final dimensions. Ring groove corners are cut to a 30-degree angle. Core plugs are removed (this is an important precaution when hollow objects are heated or welded) before preheating the piston with a blowpipe to about 600 degrees F.

For cast iron pistons that operate at temperatures higher than 650 degrees F., cast iron welding rod is used. It is also used for cast iron pistons in those types of service where bronze might be subjected to corrosive attack, as in ammonia systems.

Rebuilding with cast iron rod requires more preheating than bronze-welding. Extra time should be allowed after welding for cooling. — *Courtesy "Linde Tips," Linde Air Products Company.*

Tractor Maintenance

(Continued from page 25)

Drain the oil and refill with the proper grade. If drainings contain metal chips or particles, look for the source. If there is any leakage, check all seals and gaskets, replacing parts necessary to prevent further leakage.

General

Install new lube oil and fuel oil filter elements. Inspect the machine for loose and broken, or missing parts. Replace all damaged or missing grease fittings and be sure the grease tubes are connected and in good condition.

Following these suggestions, your equipment should be in top-notch shape when spring arrives. The important thing to remember is that preventive maintenance is the best insurance available.

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NO. 940

Equipment you ought to KNOW ABOUT

Apron Feeder

Manufacturer: New Holland Machine Company, New Holland, Pennsylvania.

Claims: An apron feeder, engineered to give trouble-free feeding, has just been introduced by New Holland.

Called the Model 30, the unit has a new multi-plane throat that won't let odd-sized stones slip into the neck and cause time-wasting jams. Designed primarily for use with New Holland Double Impeller Breakers, the Model 30 is also adaptable to most stone reducing units.

"TD-24" Equipment

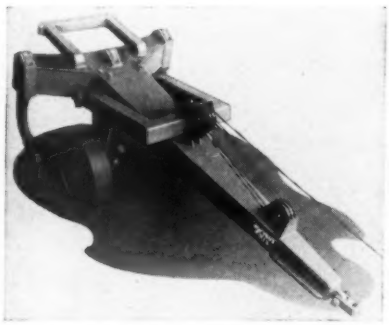
Manufacturer: Bucyrus - Erie Company, South Milwaukee, Wisconsin.

Claims: Now in production is a complete line of cable-controlled tractor equipment — including bullgrader, bulldozer, scraper, and ripper — especially designed for the new International TD-24 crawler tractor. Engineered to move more dirt per horsepower, these new attachments have been tested and fully proved in the field.

According to the manufacturer, the construction of every one of the machines is balanced to make the most of TD-24 power with minimum stress on tractor or attachment.

Full visibility is one of the most important features of the bullgrader and bulldozer. With compact radiator guard and sheave support set close to the sides of the tractor and the upper bar close to the engine hood, the operator can see everything that the blade is doing.

The new scraper, called the B-250, has a struck capacity of 22 cubic yards. Low center of gravity makes for speed and stability in field operation. Differential bowl and apron reeving keeps rope pulls low while giving maximum power at the start of the positive rolling ejection dump. The scraper's apron can be converted from the conventional solid type to hinged type for fast ejection of even the stickiest materials. Other features claimed for the B-250 are: exclusive double-curve cutting edge, front-mounted hoist tackle, and wide-spread rear wheels.



The Model CR-4 heavy duty ripper is said to be ideal for breaking up tough-digging, hard-loading materials. It has detachable alloy steel standards, angled for natural digging suction. V-shaped rear end and proper spacing of standards allow ample clearance for up-rooted materials.

Power for the new TD-24 attachments is controlled by either a front-mounted or rear-mounted power control winch. The front-mounted winch, designed especially for the new tractor, is a single drum unit for bullgrader or bulldozer control. The rear-mounted winch is double drum and can be used with bullgrader, bulldozer, scraper , ripper, or other attachments. Both winches have planetary drive.

Semi-Portable Gravel Plant

Manufacturer: Pioneer Engineering Works, Inc., Minneapolis 13, Minnesota.

Claims: The new Pioneer 145R semi-portable crushing and screening plant is now available.

The 145R is a duplex plant having a 1524 jaw crusher and a 30 x 18 roll crusher, together with folding bucket elevator and power unit, all mounted on a structural steel chassis with steel wheels. Pneumatic tires are optional.

Additional units consist of a 3-deck, 3′ x 10′ vibrating screen mounted atop a 20-cubic yard, 3-compartment steel storage bin, and a return conveyor from the screen to the roll crusher.

Tamping Roller

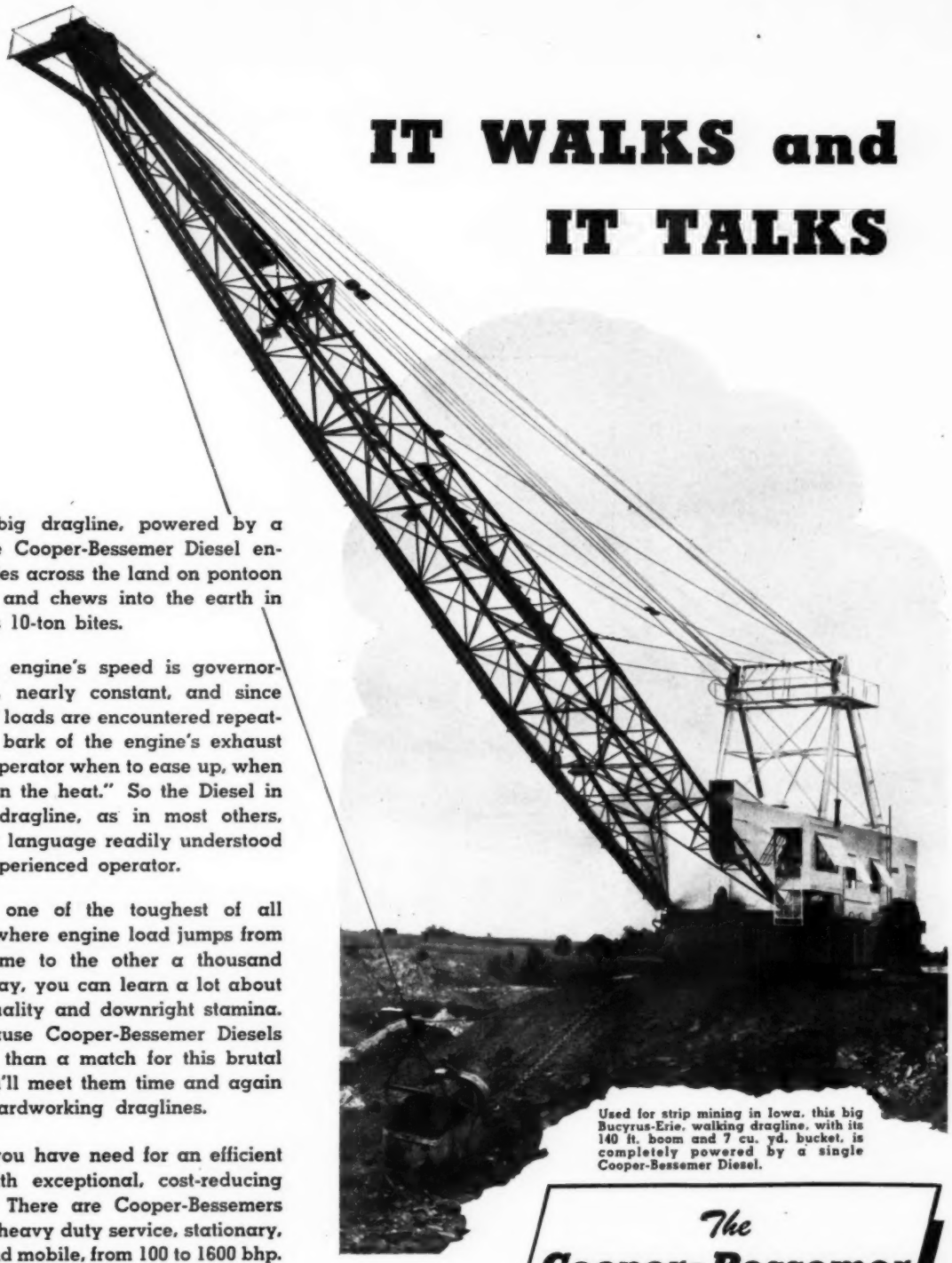
Manufacturer: Shovel Supply Company, 4900 Hines Blvd., Dallas, Texas.

Claims: This new tamping roller is said to give greater compaction at comparatively lower price.

Already being used on such projects as the Canton Dam in Oklahoma, Falls River Dam in Kansas, and Potholes Dam in Washington, the new unit has special wedge shaped feet, hard-surfaced for longer life, which prevent disturbance to surrounding road material. Each foot has

(Continued on page 40)

IT WALKS and IT TALKS



THIS big dragline, powered by a single Cooper-Bessemer Diesel engine, strides across the land on pontoon feet . . . and chews into the earth in monstrous 10-ton bites.

Since the engine's speed is governor-regulated, nearly constant, and since maximum loads are encountered repeatedly, the bark of the engine's exhaust tells the operator when to ease up, when to "pile on the heat." So the Diesel in this big dragline, as in most others, talks in a language readily understood by the experienced operator.

Here, in one of the toughest of all services, where engine load jumps from one extreme to the other a thousand times a day, you can learn a lot about engine quality and downright stamina. And because Cooper-Bessemer Diesels are more than a match for this brutal work, you'll meet them time and again in big, hardworking draglines.

Perhaps you have need for an efficient Diesel with exceptional, cost-reducing stamina? There are Cooper-Bessemers for every heavy duty service, stationary, marine and mobile, from 100 to 1600 bhp. Get in touch with the nearest Cooper-Bessemer office for specific information.

Used for strip mining in Iowa, this big Bucyrus-Erie, walking dragline, with its 140 ft. boom and 7 cu. yd. bucket, is completely powered by a single Cooper-Bessemer Diesel.

The **Cooper-Bessemer** *Corporation*

MOUNT VERNON, OHIO — GROVE CITY, PENNA.

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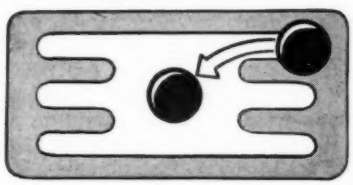
Save this lost time

Everytime you shift gears with old style dozers you have to . . .

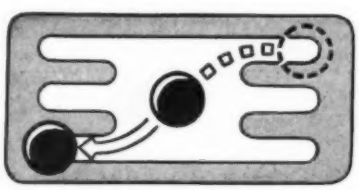
1 **Release clutch**

2 **Apply brakes**

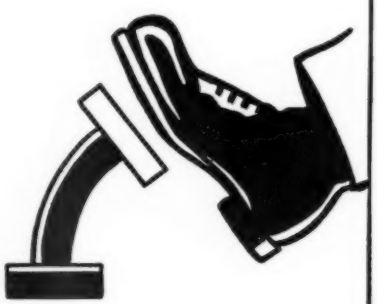
3 **Shift— forward to neutral**



4 **Shift— neutral to reverse**



5 **Release brakes**



6 **Engage clutch**

(Although many operators shift gears without stopping, this is not a recommended practice.)

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With modern TOURNADOZERS
move selector to ratio wanted and

TOURNADOZER'S constant-mesh Tournamatic Transmission gives you instantaneous selection of any one of four speeds up to 15 m.p.h., forward or reverse . . . no foot clutching . . . no gear shifting. Air-actuated clutches instantly give you the right gear combination. One movement of the hand speed selector . . . and you are in gear and moving right now!

There is no "let-up" or pause to change gears when moving forward or backward . . . no loss of momentum . . . no jockeying for gears . . . nor travel in lower gears on grades or in tough going because you can't get under way in the higher ratio. With a Tournadozer, there is no danger of stripping gears because operator took a chance on double-clutching and didn't make it. There's no trick in following your load and keeping it rolling, nor in synchronizing your speed with that of the scraper in pusher loading.

Because it's so easy to operate, "skinners" like this new dozer . . . keep it hitting the ball *all day.*

Ask your LeTourneau Distributor to show you the Tournadozer in action . . . time study and compare its operation with your old style dozers.

Tournamatic, Tournadozer — Trademarks — CB5

When opening side-hill cuts, or dozing over steep banks, Tournadozer's fast-acting cable control gives you instant blade response . . . 8-foot-wide gauge, plus short-coupled wheelbase, give greater stability for sure-footed traction. All-around visibility, big-capacity bowl, accurate grading ability and fast forward and reverse speeds all help you move more yards per hour.

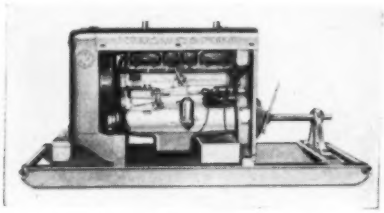
LETOURNEAU
PEORIA, ILLINOIS

HIGH-SPEED RUBBER-TIRED TOURNADOZERS

New Equipment

(Continued from page 36)

a bearing pressure of 590 pounds per square inch of foot area. When empty, the drum has a bearing pressure of 320 pounds per square inch.



"UD-24" Diesel Engine

Manufacturer: International Harvester Company, Industrial Power Division, 180 N. Michigan Avenue, Chicago 1, Illinois.

Claims: The UD-24, the largest and most powerful diesel engine ever built by International is now in production.

A 6-cylinder, 1090-cubic inch displacement engine with a 5¾ x 7-inch bore and stroke, the UD-24 is designed for heavy-duty operations in construction machinery, oil fields, cotton gins, refrigeration plants, electric power plants, rock crushers, sawmills, and for many other applications. The UD-24 engine develops 191 h. p. at 1375 r.p.m. while the UD-24 power unit, equipped with radiator, fan, clutch, and power take-off, develops 180 h.p. at 1375 r.p.m.

Treadstock Hose Cover

Manufacturer: Goodyear Tire and Rubber Company, Akron, O.

Claims: Following exhaustive tests at Granby dam in Colorado, a new type treadstock cover for "Redwing" air hose line is now available.

The new hose cover utilizes a cushioning stock similar to that developed recently by Goodyear compounders for tire treads. The softness of this heavy gauge stock affords maximum resistance to extreme abrasion and gouging common to most air service conditions, the manufacturer states.

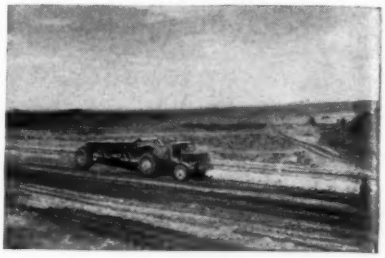
The hose is reinforced with a cabled cotton body for greater carcass strength and flexibility.

Bottom-Dump Truck

Manufacturer: The Euclid Road Machinery Company, Cleveland 17, Ohio.

Claims: One of the latest developments in Euclid's line of earth-moving equipment is the Model "LDT" bottom-dump truck.

This truck is powered by a 275 h. p. diesel engine and hauls a payload of 25 cubic yards struck



measure at a top speed of 24.1 miles per hour. Tire sizes are 14.00 x 24 front, and 27.00 x 33 on drive and trailer wheels. Large single tires are said to provide good traction and flotation for difficult haul roads and soft fills.

The unit's low loading height and wide hopper facilitate loading with large shovels, draglines, and overhead hoppers. Short wheel base of the tractor and universal hitch design permit short turns.

LIGHTER

STRONGER

WELLMAN

Williams Type BUCKETS

Stronger because they're constructed of **welded rolled steel**... *lighter* because non-essential weight has been eliminated. Wellman buckets meet every requirement of heavy service with longer life and lower cost! A type for every service: Multiple Rope, Power Arm, Dragline, Power Wheel, Special Service. ⅜ to 16½ yd. capacity.

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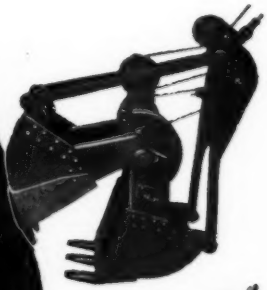


THE WELLMAN ENGINEERING COMPANY

7002 CENTRAL AVENUE CLEVELAND 4, OHIO

GOING PLACES FAST

CAPACITY: (normal conditions per hour) shovel or dragline—60 yards; trench hoe—100 feet of 5 foot ditch.

LOADING FROM STOCK PILE

TRENCHING WITH "MOLES PAW"

DRAGLINE OPERATION

CLAM SHELL MOUNTED ON HALF TRACKS

THE 1/3 YARD SCHIELD BANTAM

TRUCK MOUNTED POWER SHOVEL • TRENCH HOE DRAGLINE • CLAM • PILEDRIVER • CRANE

Just as soon as you finish one job the BANTAM is ready to make profits on the next. No delays dismantling and loading on trailers. It mounts on any 1½ ton truck and speeds across town or across country. Drives up to the job and digs in. Changing from shovel to trench hoe, dragline, clam, piledriver or crane is a matter of minutes. Interchangeable booms and buckets are designed for rapid installation. Split-type laggings permit proper line speeds and assure high performance on all operations.

Unequalled for performance in close quarters, the BANTAM makes money on jobs where heavy equipment is unprofitable. Its full circle design and smooth, FAST CYCLE operation piles up yardage. All major assemblies roll on *ball bearings* for easier handling and longer service life. Its high strength alloy construction is built to take tough going.

There's a BANTAM near you. Climb into the roomy cab and learn first hand about its versatility, mobility, easy operation and capacity for getting jobs done. You'll see why it's going places as a real money-maker.

Write for Complete Details

THE SCHIELD BANTAM CO., INC.
202 PARK STREET • WAVERLY, IOWA

Sold and Serviced by

LEADING CONSTRUCTION EQUIPMENT DISTRIBUTORS

Arizona "Caterpillar" D7 Tractor and No. 70 Scraper leveling farmland for cotton near Buckeye. Owner J. C. Higgins says: "The No. 70 is a dandy. Ease of loading is what I like best. We can fill the scraper without the pusher. This saves me money, as I can have the pusher tractor working on some other job."

They all

Iowa "Caterpillar" D7 Tractor and No. 70 Scraper leveling ground for Muscatine athletic field. Owner Lee Osborne says: "If I can have two months more of good weather, this scraper won't owe me a thing. It's a fine scraper and it has a fine dealer service behind it. I wouldn't think of buying this type of equipment from anyone but 'Caterpillar'."

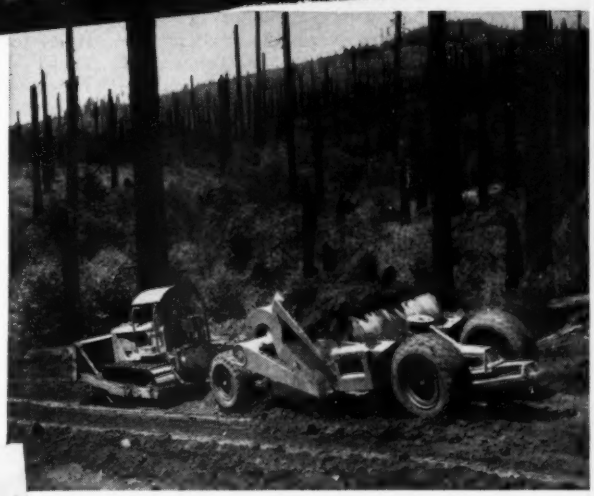
Indiana "Caterpillar" D7 Tractor and No. 70 Scraper grading road for subdivision. Lowell Engineering Company's Lyle W. Brown says: "This scraper makes loading easier—can load in 2nd gear. Swung low to ground for balance. Can get in close quarters. Large tires give good flotation in sandy soil. Allows good visibility of road and cutting edge."

New York "Caterpillar" D8 Tractor and No. 80 Scraper stripping overburden for gravel pit to supply sub-base for highway. Owner, Rochester Concrete Construction Co., Inc. Operator Leon Jackson says: "It's the easiest scraper to load I've ever used and I can dump in 6th gear."

California "Caterpillar" D8 Tractor and No. 80 Scraper loading and dumping shale rock on county road widening job. For Monterey County Highway Department, Mr. H. Cozzens says: "We do a lot of changing from 'dozer to scraper work and appreciate the ease of quick mounting. The No. 80 Scraper is the easiest and fastest loading, and operator says cable control is the smoothest he has ever used."

Colorado "Caterpillar" D8 Tractor and No. 80 Scraper building 25-foot fire-wall for refinery tank yard in soft, sandy soil. Owner Fred DeBetz says: "I have used most makes of scrapers and this No. 80 'Caterpillar' is by far the best I have ever used."

cheer for "CATERPILLAR" SCRAPERS



The success of "Caterpillar" products has always been based on outstanding performance in the field. As with Tractors and Engines, it is the fine performance of "Caterpillar" Scrapers that brings from owners and operators in all parts of the country such statements as are quoted here.

(The standard model No. 70 Scraper is priced at $6050; the No. 80, $8565—both F.O.B. Peoria, subject to change without notice.)

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

CATERPILLAR
REG. U. S. PAT. OFF.
DIESEL
ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

Washington "Caterpillar" D7 Tractor, No. 7S Bulldozer and No. 70 Scraper building new road to open up new farmland. Messrs. A. N. Stanley, James Reilly and Charles L. Hall, Commissioners of Clark County, owner, write: "The county's past success with 'Caterpillar' Motor Graders prompted us to buy this new 'Caterpillar' Diesel Tractor and Scraper. We like them so well that we are now considering the purchase of another D7 Tractor and No. 70 Scraper."

Shots from the FIRING LINE

Dallas AGC Convention Attended by 1300

The 29th annual convention at Dallas, Texas, of The Associated General Contractors of America — largest in its history—drew 1,300 delegates to tackle the problems of making 1948 a record breaking year in construction. The convention ratified a plan for establishment of a national joint board for the settlement of jurisdictional disputes. It heard the first official announcement that most construction operations are construed as being covered by the Taft-Hartley Act, and how the National Labor Relations Board expects to administer the act for construction.

Endorse Federal-Aid Program

It endorsed a $500,000,000 a year federal-aid highway appropriation on a continuing basis. In 20 resolutions it recommended a number of ways to improve construction conditions during the year. And it considered means of bringing about greater cooperation by all parts of the industry.

A feeling of optimism was evident, tempered by the realization that developments in the European recovery program or major upsets to the national economy could hamper the construction industry during the year. Contractors from most parts of the country looked forward to a large volume of work. Improvements were reported in the productivity of labor and efficiency of contractors' own organizations.

Materials and equipment generally were reported as becoming more readily available. The elements contributing to construction costs were examined, and the hope was expressed that there could be an early stabilizing of prices throughout the economy, and in construction.

New officers installed for 1948 included: Dwight W. Winkelman, D. W. Winkelman Co., Syracuse, N. Y., president; Adolph Teichert, Jr., A. Teichert & Sons, Sacramento, Calif., vice-president; and William Muirhead, William Muirhead Construction Co., Durham, N. C., secretary-treasurer.

Construction Contracts Reach New 1st Month High

F. W. Dodge Corporation reports the dollar volume of construction contracts awarded in January in the thirty-seven states east of the Rocky Mountains set a new January high mark in the Dodge statistical series dating from 1925. January's awards totaled $615,206,000, and represented a gain of eight per cent over January of last year when the previous dollar-volume high for the month was reported. January's awards, however, were two per cent less than the total for December.

Ten of the fifteen Dodge reporting regions showed gains over January a year ago, with increases of more than 50 per cent reported for upstate New York; western Pennsylvania and West Virginia; southern Michigan; Minnesota and North and South Dakota. Declines from last January ranging from 17 to 35 per cent were reported for New England; metropolitan New York and northern New Jersey; southwestern Ohio and Kentucky; Louisiana and Mississippi; and Texas.

Nonresidential contracts awarded for projects east of the Rockies amounted to $240,544,000, showing a gain of 20 per cent in this classification of building over January of last year. Heavy engineering awards also showed a 20 per cent gain.

Residential contracts last month totaled $238,098,000, showing an eight per cent decline from January of last year and a five per cent gain over December. Gains in January compared with January 1947 were reported, however, for the southeastern states; western Pennsylvania and West Virginia; southern Michigan; northern Illinois, northern Michigan, Iowa, Indiana, Wisconsin, eastern Missouri, southern Illinois, western Tennessee, and Arkansas, and the State of Texas.

Set New Stripping Record

Butler Brothers, Nashwauk, Minnesota, have announced an "all time record" for their Mesabi Range stripping work at the company's South Agnew, Minnesota, iron ore mine. In January, their Bucyrus-Erie 120-B electric shovel with 4½ yd. dipper loaded more dirt than was ever loaded by a similar unit on a Butler Brothers job. A total of 319,433 cu. yds. was moved in 85 eight-hour shifts for an average of 469.7 cu. yds. per hour for 680 hours. The record is even more remarkable in that eight to ten days during the month temperatures ranged from 10 to 40 degrees below zero. The material was hauled in nine 20-ton Euclid trucks.

Bray, Barrows Take New Ky. Highway Dept. Posts

Dwight H. Bray, 47, Frankfort, former director of the division of maintenance and for the past three years director of the division of design became chief engineer of the Kentucky Department of Highways last month. Mr. Bray succeeded Thomas H. Cutler who has directed the engineering affairs of the department since 1936. Mr. Cutler will become consulting engineer attached to the technical staff of the department.

Mr. Bray, who holds two engineering degrees from the University of Kentucky and a geology degree from the University of Missouri, has been with the department since 1920 when he was assigned to the field location office, Henderson, as a draftsman. He was director of maintenance for seven years and was named design director in 1945.

Barrows Replaces Ready

Thomas J. Ready, Jr., Lexington, resigned as director of the department's division of equipment last month. W. D. Barrows, Providence, has been named temporary acting director of the division and J. E. Slaton, Madisonville, will

• Across the sands of Saudi Arabia, three fleets of trucks will soon start work on oil field development and construction of the "biggest and costliest pipeline in oil history." The 6-wheel all-drive trucks have twice the radiator capacity of the largest standard truck made, carry 300 gallons of gasoline, and are equipped with low-pressure tires for off-the-highway desert operation. The bare chassis weighs 14 tons and the trucks will handle pay loads of 22½ tons. In the photo, one of them is being test loaded with sand by a truck crane. Authenticated News Photo.

serve as assistant director of equipment.

Mr. Barrows, a professional engineer, is a graduate of the College of Engineering, University of Kentucky. He served eight years as a member of the state board of registration for professional engineers.

B. C. Lee, Glencoe, assistant director of equipment, will continue his duties as office manager, according to Highway Commissioner G. L. Withers.

Up Gas Tax in Ky. and Mo.

A bill increasing Kentucky's gasoline tax rate from 5 to 7 cents a gallon, to raise an additional $8,000,000 a year for rural roads, has been given final approval by the state legislature and signed into law by Gov. Earle C. Clements, who had advocated such action.

The measure went through the state senate by a vote of 33 to 5, after having been approved by the House by a vote of 81 to 14. Its enactment came only 90 hours after it had been recommended by the governor to a joint session.

Unsuccessful opposition was led by Senators Paul Stapleton and Sylvester J. Wagner, who argued that the new tax will give Cincinnati gasoline dealers a margin of 3 to 4 cents a gallon over dealers in north Kentucky. This, they warned, will put out of business from 50 to 75 per cent of filling stations in urban north Kentucky.

Proponents asserted that, while the increase may hurt gasoline dealers in Ohio river towns, it is desperately needed to pull rural Kentucky out of the mud.

Mo. Increase 2-3½%

A proposed state constitutional amendment increasing Missouri's state gasoline tax from 2 to 3½ cents a gallon, with the additional revenue from the 1½-cent boost earmarked for county roads and city streets, has been given final approval by the state legislature and will be submitted to the Missouri electorate in November.

Estimates are that the amendment would produce about $12,000,000 a year additional revenue, of which $8,000,000 would be allocated to counties and $4,000,000 to municipalities. Municipal gasoline taxes, now levied by St. Louis, Kansas City and a number of other Missouri cities, would be abolished under the proposed amendment.

Highway Heads Advocate Nationwide PRA Survey

Continuation of federal aid for highway construction at a half-billion-dollar annual level for the next five years was advocated in a resolution adopted by the Association of Highway Officials of the North Atlantic States at its three-day 24th annual convention last month in Atlantic City, N. J.

The association also called for a survey by the U. S. Public Roads Administration to determine the actual cost of improving the highway system of each state "so that funds which might be appropriated by Congress may be commensurate with the costs required to develop the highway systems to standards adequate for the numerous links in those systems." Also recommended was the adoption of legislation by the states limiting the maximum axle loading of all vehicles to 18,000 pounds.

Urge Coordinated Safety Plan

Urging appropriation of funds for elimination of major traffic hazards through modern design and construction, another resolution warned that the anticipated increase in motor vehicle use in the days ahead "is destined to witness a mounting toll of accidents on highways, unless we have a coordinated effort of education of the driver, enforcement of traffic laws and engineering of safety into our highways."

Pointing out that engineering improvements will represent a large capital outlay, the association commended to governors and legislatures "the necessities for the appropriation of such funds as will enable our highway departments to construct safer highways."

A 50 per cent reduction in the productivity of labor in comparison with prewar years was cited by Charles M. Noble, engineer of the New Jersey Highway Department, as a major cause of skyrocketing highway construction costs.

Charles M. Upham, engineer-director

"HERCULES"* (RED STRAND) the DEPENDABLE WIRE ROPE for any TOUGH JOB

Wherever or for what purpose Wire Rope is used . . . regardless of the industry or place . . . there is a type and construction of "HERCULES" (Red Strand) suited to meet any and every heavy duty demand — no matter how tough the job.

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Consult our Engineering Department at any time for specific recommendations to fit *your* particular need.

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of the American Road Builders Association, told the convention that understaffed highway departments were seriously delaying road construction throughout the country. "Surveys of engineering personnel in 48 state highway departments show 10,000 unfilled positions," he said.

"Replan for National Security"

Emphasizing national defense as the principal consideration in road construction, Federal Public Roads Commissioner Thomas M. MacDonald declared that "in the face of major developments of potentials that perhaps now are only partially known, we cannot do otherwise than carefully reconsider and replan highway facilities for the national security in light of the best knowledge we can obtain."

Speed in building express highways to relieve permanently New York City's traffic congestion was urged in an address by Dr. D. B. Steinman, consulting engineer who is working out construction problems with City Park Commissioner Robert Moses. Vehicular crowding in New York streets will get continually worse as a result of the haphazard control methods now in use, Steinman said. He also advocated the compulsory construction of garages under all large buildings planned for the mid-Manhattan area.

Other speakers heard during the conclave included Burton W. March, director of the traffic engineering and safety department of the American Automobile Association, who called for steps to reduce the number of night accidents.

Officers elected by the association were W. F. Childs, chief engineer of the Maryland State Roads Commission, president; John C. Burnham, Maine State Highway Department, vice president, and Lee Grover, New Jersey State Highway Department, secretary and treasurer.

Widow of Founder New Patino Mines President

Joseph C. Rovensky, chairman of the board of Patino Mines & Enterprises Consolidated, Inc., announces the election of Mrs. Albina R. Patino as president of the company and a member of its board of directors. She succeeds her late husband, Simon I. Patino, founder of the company, under whose development it became the world's largest tin producer. Mr. Patino died April 20, 1947.

Mr. Rovensky stated that Mrs. Patino's succession to the executive positions in the mining enterprises which Mr. Patino founded and developed was in recognition of her extensive knowledge of their operations and personnel. Mrs. Patino had been actively associated with her husband in the executive direction of Patino Mines & Enterprises Consolidated, Inc., its predecessor companies and other important business and philanthropic interests of the Patino family. Mrs. Patino is a decendant of one of the oldest Spanish families to settle in Bolivia.

Patino Mines & Enterprises Consolidated, Inc., is incorporated under the laws of Delaware. Its principal mining properties, mills, power installations and transportation equipment are located in the Department of Potosi, Bolivia.

Vt. Reveals FA Totals

The Vermont state highway board has made public figures showing that federal aid highway construction contracted or started in Vermont during 1946-1947 consisted of 81 miles in 56 projects totalling an estimated cost of $5,462,594.24. Of this amount, the federal government will pay an estimated $2,867,932.82 and the state $2,594,661.42. On January 1, 1948, according to the highway board, an additional 105 miles of federal aid construction estimated at $5,157,011.14 had been programmed for commencement during 1948 and early 1949.

Besides federal aid work, the highway board reported that on the state system 16 miles costing $116,874.88 were built entirely with state money in 1946 and 1947. Special assistance to towns in paving their state aid highways completed another 150 miles in the two years at a total cost to the state of approximately $500,000.00.

The board's present policy, it was stated, is to give priority to paving the gravel sections on main and second-

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NEW HOLLAND
DOUBLE IMPELLER BREAKER

Anyone whose business involves stone-crushing knows that high production of uniform aggregates means savings. The Double Impeller Breaker does primary and secondary crushing in one fast operation. There is no grinding or crushing . . . just hard impacts to give clean cubical pieces. The same model breaker will produce as high as 60 percent fines, as low as 12 percent, by simple adjustments. Ask us.

T. Southworth
GLENWOOD ROAD TRACTOR & MACHINERY CO. INC MENANDS, NEW YORK
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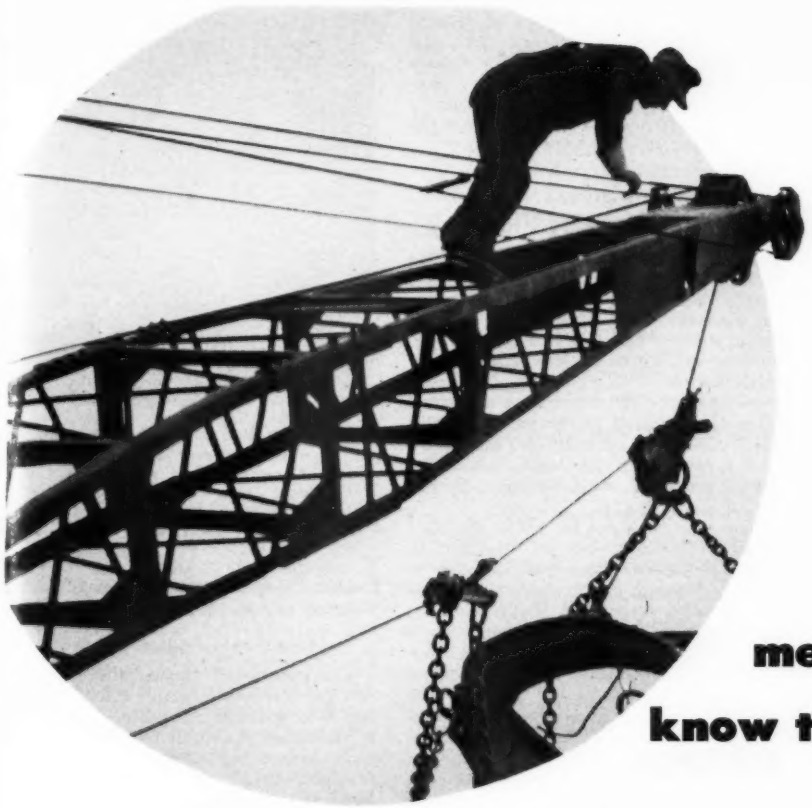

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every time!

MADE to close tolerances and unvarying quality standards by the world's largest manufacturer of wire rope, U·S·S American TIGER BRAND Excellay Wire Rope possesses strength, toughness, and flexibility in the right combination to stand up tirelessly under long, hard service. See or call your supplier today. Our wire rope experts are readily available in the field to help you determine your needs and handle out-of-the-ordinary problems. No company offers a more complete engineering service.

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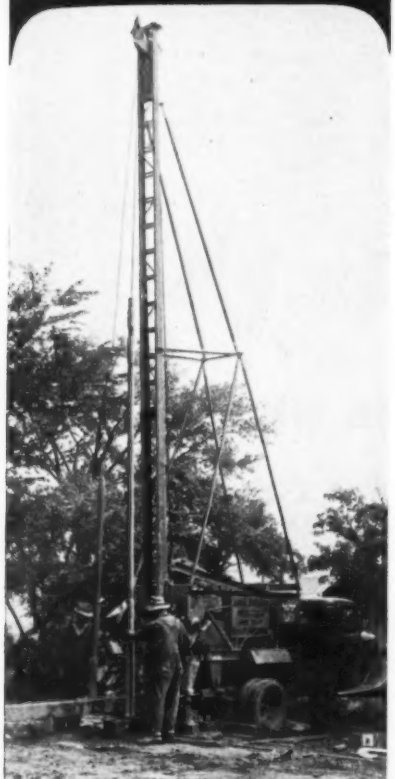
Southern Distributors
United States Steel Export Company, New York
UNITED STATES STEEL

EXCELLAY PREFORMED

THE BIG DEMAND IS FOR TIGER BRAND

PROFIT POSSIBILITIES WORTH LOOKING INTO



If your blast hole drilling requirements are not extensive enough to keep a blast hole drill busy full time, it might pay you to investigate a machine that can handle your drilling as well as earn money for you on contract, rental, or water well jobs over a wide territory. Bucyrus-Erie 21-W and 22-W drills, widely popular among water well drillers, will put down your blast holes with the same speed and power as larger Bucyrus-Erie drills and, in addition, have the spooling capacity to drill the deeper holes which water well work requires. Don't overlook these machines in planning your future equipment setup. 20W46

BUCYRUS ERIE

South Milwaukee, Wisconsin

ary roads. Of the 81 miles of federal aid work started in 1946 and 1947, and the 105 miles programmed for future federal aid, 135 miles will be new paving. Most of the state financed projects on both state and state aid systems are new paving also, the board said.

U. S. Engineers to Aid Turkish Highway Planning

Eight engineers of the Public Roads Administration left New York last month to aid the government of Turkey in planning and constructing a national system of modern highways, according to Thomas H. MacDonald, Commissioner of Public Roads. The mission was sent in response to a request from the Turkish government through the Department of State for assistance in improving its highways under the Turkish Aid Program provided by the act of May 22, 1947.

The mission is headed by H. E. Hilts, Deputy Commissioner of the Public Roads Administration, who will stay in Turkey through the preliminary stages of the work. Jesse E. Williams has been appointed to head the office being established at Ankara as division engineer. Mr. Williams has been district engineer in charge of Federal-aid work in New Mexico. Four more engineers will follow next month. All of these engineers are specialists in various branches of highway work such as planning, financing, design, material testing, construction, bridges, maintenance and equipment.

• Walter C. Bests' ¾-yd. Northwest 25 shovel loads silica rock to 2-ton Chevrolet truck near Chardon, Ohio. The Worthington 316 compressor in background powers drilling operations.

Long-Range Program Needed

The purpose of the mission is to assist the Turkish government in launching a long-range program of highway construction that will result eventually in a system of all-weather highways reaching to all parts of the country. Economic development of Turkey has

Good for a lot more digging!

MANGANAL

TRADE MARK REGISTERED U. S. PATENT OFFICE

11% to 13½% MANGANESE-NICKEL STEEL

REBUILDS AUGERS

Manganal Applicator Bars
Flat, Round, Square, Special Shapes

GET THE COMPLETE DOPE!
Send for our FREE Booklet "The Welding of 11% to 14% Manganese Steel."

There's a lot of life left in this telephone post Auger now that Manganal has rebuilt the spiral edge! Manganal dives in to save all equipment that would otherwise end up on the scrap heap. In this case, Manganal Flat Applicator Bars were used. There's a Manganal product for every reclamation use.

Name of Nearest Distributor Upon Request.

STULZ-SICKLES CO.
Sole Producers
91 N. J. Railroad Avenue, NEWARK 5, N. J.

been greatly hampered by lack of roads suitable for travel by motor vehicles.

Turkish officials believe that highways and motor vehicle transport will have a profound influence in the development of their natural resources, their agriculture, their industries, and their educational opportunities. All-weather roads will further develop national security and they will complement rail and water transport.

American aid is to be financed by $5,000,000 assigned by the Department of State from the Turkish Aid Fund. This will be used largely for machinery and equipment and to meet the expenses of the mission. Already equipment valued at about $750,000 has been obtained from the Army and is being shipped to Turkey. Costs of right-of-way, materials, labor and detailed supervision are to be met by the Turkish government.

Immediate objectives will be to plan and begin rehabilitation of the most urgently needed roads and at the same time train Turkish citizens in all branches of highway work from skilled laborer to highway engineer. A small group of competent mechanics, machine operators and supervisors will be sent to Turkey as instructors to develop skilled highway construction and maintenance working forces. Construction jobs will be manned completely by Turkish nationals.

Mobilize N. J. Road Crews to Fight Forest Fires

State highway department manpower and mechanical equipment have been mobilized today by New Jersey State Highway Commissioner Spencer Miller, Jr., for the forest fire fighting forces enlisted as a safeguard by Governor Alfred E. Driscoll.

"The principal units," the commissioner said, "to join the organization established by Governor Driscoll to help in preventing material loss with the threat to their personal safety of our citizens will be our maintenance department crews.

"In this division of the highway department we have 1,200 men on call throughout the State. Their renewed instructions today were to be on the alert for even the smallest blaze that might be started by a carelessly thrown cigarette or other cause.

"The tools carried in their patrol trucks will make available immediately facilities for placing backfires or other measures needed by the forestry division in checking conflagrations of greater proportions."

Davis Takes New Va. Post

Francis A. Davis has been appointed purchasing agent for the Virginia department of highways, succeeding William W. McClevy who died in March. Mr. Davis, veteran field engineer and personnel engineer since 1944, has been with the department since 1919. As purchasing agent he will head one of the department's six divisions.

During his highway career Mr. Davis served as resident engineer in Amherst, Warrenton, and Franklin, and for eight years was engineer-in-charge of the Salem highway construction district. He is an alumnus of the College of William and Mary where he was a pre-engineering student, and is a member of the Central Virginia Engineers Club.

Predict 42% of Aid Roads Will Need Replacing in '58

State Highway Departments are working to provide safer and better highway facilities to serve the 45 million motor vehicles expected to be on American roads by 1960, G. Donald Kennedy, vice president of the Automotive Safety Foundation, said in an address in Chicago. He spoke before the forty-sixth annual meeting of the Portland Cement Association at the Drake Hotel.

With eight million more automobiles on the roads, highway travel will increase by one-third to more than 450 billion vehicle miles annually, Mr. Kennedy predicted. And because of this vast increase in highway travel, Mr. Kennedy said indications are that 42 per cent of the high type roads now on the Federal-aid system will be worn out and need replacement in the next decade. The same wear and tear and old age, he said, will likewise take ter-

Shovel Operators Are Talking About . . .

A revolutionary new power shovel clutch that provides smooth, positive action in place of jerky, uncontrolled performance . . . a clutch that seldom requires adjustment . . . a clutch with only one working part, and without a single cam, lever, bolt, piston or valve.

It's a power shovel clutch with direct air power that assures positive control, without any "grabbing" effect . . . a clutch that needs no mechanical attention . . . a clutch whose simple operation automatically compensates for any wear on the clutch linings.

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DIESEL, GASOLINE OR ELECTRIC POWERED • ⅜ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

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Sauerman Cableway pictured above is digging gravel from bar in river and hauling to top of screening plant in one operation. Handles 700 cu. yd. a day at cost of few cents a yard.

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This picture shows a small Sauerman Scraper handling large stockpile of silica at processing plant. Scraper stocks out material from washery and reclaims at regular intervals from stockpile to dryer.

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Digging, hauling and dumping operations are combined in one continuous process making possible big savings in both time and labor. Only one man is required for complete control of the operation. Sauerman Cableway and Scraper Machines provide wide range of handling capacities and long reach. Remarkably low operating and maintenance costs. They dig in any kind of dry ground or under water. Gasoline, electric or Diesel.

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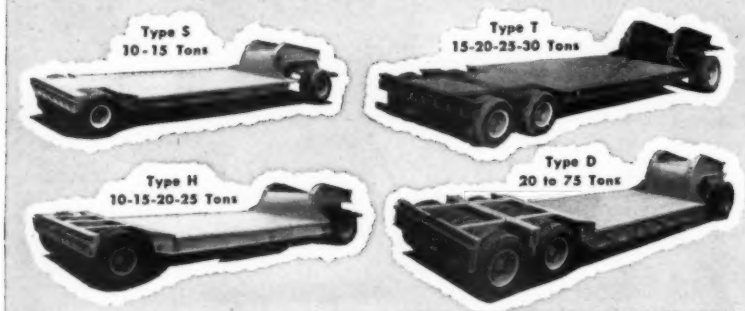
5 BASIC TYPES of ROGERS TRAILERS



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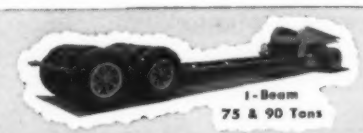

ROGERS BROTHERS CORPORATION
DESIGNERS and BUILDERS of HEAVY DUTY TRAILERS
SINCE 1915

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rific tolls on other busy highways and streets not on the Federal-aid system.

Concentrated on Few Roads

Highway planning studies made by the states in cooperation with the U. S. Public Roads Administration, Mr. Kennedy said, show that the majority of motorists do most of their driving on relatively few roads. Although there are three million miles of rural roads in the United States, he said that 42 per cent of all rural traffic is carried by just 100 thousand miles of the busiest roads. The studies also show that 700 thousand miles carry 86 per cent of all the rural traffic.

The fact-finding studies, which Mr. Kennedy said are helping the states to provide better and safer highway transportation facilities, cover the condition of present roads, volume and characteristics of road use, traffic safety requirements, population trends, land use and future industrial and agricultural developments.

California, he said, is the first state to adopt a sound, long-range highway development program based on traffic needs. Other states are hard at work collecting the facts and working out the necessary enabling legislation.

Ky. and Okla. Give Winter Road Damage Figures

Freeze-and-thaw wintry weather in Kentucky damaged well over 1,000 miles of state highways, engineers of the Kentucky Department of Highways estimate. Special crews are being organized and the regular maintenance staff of 2,230 men is rushing repairs estimated to ultimately cost from $2,000,000 to $3,000,000.

"The period just passed represented the worst weather for highways since the drastic $5,000,000 freeze-and-thaw of 1936," a spokesman for the department said. "In many places, the frost penetrated a foot or more into the subgrade. As the thaw progressed, water left pocketed affected the stability of the base. While a major portion of the damage caused is already apparent, other breaks will appear as the thaw progresses."

"The rare instance of quick freezing and equally quick thaws in Kentucky not alone cause damage to the substandard roads but also injure the better roads built to top standards. With more gradual thaws, the damage would be greatly lessened."

Okla. Total Is $2 Million

Oklahoma State Highway Director H. E. Bailey estimates that the record siege of rain, snow, sleet and ice that raked the state this winter had caused an estimated damage of $1,956,050 to the 10,000-mile state highway system. He points out that greatest havoc was wrought to cheaply constructed roads as low type asphalt, gravel and earth roads not fitted with proper base of which the state has approximately 5,900 miles.

Mr. Bailey emphasized that these types of road had been outlawed by the

present state highway commission since the commissioners assumed office a year ago and forecast that additional raw weather would pile up the damage at a rate of $100,000 a day.

The statewide survey of damage by types of road set these totals: Concrete-brick $388,250, high type asphalt $295,-000, low type asphalt $638,000, gravel $533,800, earth, $101,000.

Buckley Joins ASF Staff

Mr. J. Paul Buckley, who for the past year was engineer-director of the highway study made by the Highway Study Committee of the Michigan Good Roads Federation, has joined the staff of the Automotive Safety Foundation.

Under direction of Mr. G. Donald Kennedy, vice-president in charge of the ASF Highways Division, the Foundation is engaged in making statewide engineering investigations of road needs, similar to the Michigan study, in Oregon, Washington, Nebraska and Kansas.

Mr. Buckley will assist Mr. Kennedy in these studies as highway engineer on the Foundation staff, serving as field supervisor and special consultant.

In 1946, Mr. Buckley was project engineer on a similar survey made under Mr. Kennedy's direction for an Interim Fact Finding Committee of the California State Legislature.

AGC Announces October Exposition in Houston, Texas

Plans for conducting a Construction Industries Exposition in the Sam Houston Coliseum at Houston, Texas, next October 2-10 under the sponsorship of the Houston Chapter of the Associated General Contractors of America, Inc., have been announced by Leo E. Linbeck, president. Utilizing 160,000 square feet of floor space available in Sam Houston Coliseum and an additional 200,000 square feet of adjoining open air space for the display and operation of heavy equipment, the exposition will incorporate exhibits on commercial, industrial, municipal, public works, and residential construction.

Arrangements are being made to feature new types of construction equipment, materials, designs and services under one roof. Demonstration of new equipment, materials, appliances and tools designed to reduce building costs and save time will highlight the exposition, Mr. Linbeck said.

During late afternoons and evenings of the nine-day show, gates of the coliseum will swing open to the general public. In addition to the actual operation of construction equipment, appliances, the demonstration of safety devices, training of construction apprentices in carpentry and bricklaying, and many other attractions, several feature entertainment programs are being scheduled, including major network broadcasts direct from the exposition grounds.

Arrange Student Tours

Co-operation of various other associations and groups within the industry, including organized labor, is being given the Houston exposition, Mr. Linbeck said. Architectural and engineering exhibits will be featured, and

Extra Power with Smooth, Non-Grabbing Action—gives greater SAFETY and adds countless miles to tire life.

Dependable Holding Power at all service temperatures.

Greater Wear Life—longer service with fewer adjustments.

Factory Engineered and Service Proved.

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WON'T QUIT OR CAUSE TIME OUT
A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.
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New York, N. Y.

• Little Sister Coal Corporation's 17-yd. Bucyrus-Erie 550-B stripper uncovers coal at St. David, Ill.

student architects and engineers from various colleges throughout the Southwest will be invited to attend the exposition in organized tours to study modern trends in the construction industry, both in materials and methods.

Mr. Linbeck has appoined Russell W. Nix, president of the T. B. Hubbard Construction Company and a vice-president of the Houston Fat Stock Show, as chairman of the AGC executive committee in charge of the exposition. Loy W. Duddlesten, Executive Secretary of the Houston Chapter AGC will be General Manager. Milton H. Cohen has been named Assistant Manager and will handle organization details of the show, including the allocation of exhibit space. Mr. Cohen has been identified with similar shows in the automotive industry. Exposition headquarters have been established in the AGC Office Building, Gray and Crawford Streets, in Houston, Texas.

Hart New Montana Engineer

Appointment of Scott P. Hart as Montana state highway engineer, succeeding Howard W. Holmes, has been announced by Gov. Sam C. Ford. Hart has been with the Montana highway department for a quarter-century, during which he advanced from instrument man to resident engineer, division engineer, maintenance engineer and materials engineer. Holmes, stepping down at his own request, will continue as bridge engineer.

Nebraskans "Ready to Pay"

Representatives of more than a score of southwestern Nebraska cities declared at a recent hearing in McCook that residents of their area want good roads and are willing to pay increased taxes to obtain them. The hearing was conducted jointly by the state legislative council's subcommittee on roads and the governor's highway advisory committee.

An increased license fee for automobiles and trucks was favored by nearly all of the witnesses as a means of financing an expanded road construction program. A few suggested a gasoline tax increase and a higher property tax. There was on advocate of a sales tax.

$61 Million Fla. Program

A 1948 budget calling for expenditure of $61,375,601 has been tentatively adopted by the Florida State Road Department, with final action scheduled to be taken this month.

The proposed new budget is lower than the record 1947 budget of $65,459,865. One reason for the difference, it was explained, lies in the fact that last year's budget included a carryover of $18,900,000 in surplus cash funds largely accumulated during the war years. The new budget includes a cash carryover of only $7,646,000.

New Carolina RBA Heads

J. W. Thompson of Greensboro, N. C., was elected president of the Carolina Road Builders Association at the concluding session of its annual convention in Southern Pines, N. C. He succeeds E. H. Hines of Greenwood, S. C.

C. P. Ballenger Jr., of Greenville, S. C., was elected vice president. Named to the board of governors from North Carolina were N. K. Dickerson of Monroe, J. P. McGuire of Durham and Ruber Arthur of Greensboro. Elected to the board from South Carolina were Roy Geiss of Columbia and W. W. Wannamaker of Orangeburg.

Md. Road Program

Maryland's five-year $175,000,000 road and bridge construction program is moving along at a satisfactory rate, William F. Childs Jr., chief engineer of the State Roads Commission, declared in an address before the Maryland Association of Engineers, Inc.

"We are planning to have under contract some $40,000,000 worth of roads and bridges by the end of 1948, one half of which we hope to have under contract by July 1," he revealed.

ERIE BUCKETS

• Erie builds all types of buckets in various capacities and weights to meet the job and operating conditions. Choose the correct bucket for the job and you get maximum speed and output. Write for broadside on the complete Erie line of buckets.

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How 19,000 companies up take-home pay *without upping payrolls*

Can you deduct $18.75 from $60.00 and get $66.25? *Yes.* And the way you can do it is mighty important to your company—and to the nation!

You start with $60, representing someone's weekly take-home pay. You deduct $18.75 for the purchase of a U.S. Savings Bond. That leaves $41.25. But $41.25 isn't what the worker takes home. He takes home $41.25 *plus a $25 Savings Bond.* Total (assuming he holds the Bond till maturity): *$66.25.*

WHAT 19,000 COMPANIES HAVE LEARNED

In the 19,000 companies that are operating the Payroll Savings Plan for the regular purchase of Savings Bonds, employees have been more contented in their jobs—absenteeism has decreased—even accidents have been fewer!

Those are the "company" benefits the Plan provides, in addition to extra security for individual employees.

But the Plan has other, far-reaching benefits of basic importance to both your business and the national economy...

SPREADING THE NATIONAL DEBT HELPS SECURE YOUR FUTURE

The future of your business is closely dependent upon the future economy of your country. To a major extent, that future depends upon management of the public debt. Distribution of the debt as widely as possible among the people of the nation will result in the greatest good for all.

How that works is clearly and briefly described in the free brochure shown at the right. Request your copy—*today*—from your State Director of the U. S. Treasury Department's Savings Bonds Division.

ACTION BY TOP MANAGEMENT NEEDED

The benefits of regular Bond-buying are as important today as ever—but war-time emotional appeals are gone. Sponsorship of the Payroll Savings Plan by a responsible executive in your company is necessary to keep its benefits *advertised to your employees.*

Banks don't sell Savings Bonds on the "installment plan"—which is the way most workers prefer to buy them. *Such workers want and need the Payroll Savings Plan.*

Those are the reasons why it's important to make sure that the Plan is adequately maintained in your company.

The State Director will gladly give you any assistance you wish.

"The National Debt and You,"

a 12-page pocket-size brochure, expresses the views of W. Randolph Burgess, Vice Chairman of the Board of the National City Bank of New York—and of Clarence Francis, Chairman of the Board, General Foods Corporation. Be sure to get your copy from the Treasury Department's State Director, Savings Bonds Division.

The Treasury Department acknowledges with appreciation the publication of this message by

Excavating Engineer

This is an official U.S. Treasury advertisement prepared under the auspices of the Treasury Department and the Advertising Council

• Above: Medium rip-rap excavated by the shovels is loaded—without processing—directly onto railroad cars of the Southern Pacific line.
• Above Right: This view shows the new jaw-crusher plant (center), the newly-excavated lower quarry face with Southern Pacific railroad tracks on same level.
• Right: View from the top of the Stephenson-Adamson belt conveyors which haul material, pre-processed in the jaw crusher, to the secondary crushing plant on the upper level.
• Below: Crushed rock ready for shipment.

New "Low Down"

(Continued from page 30)

ous, the men are used on other tasks in between.

Shovel and Truck Work

Rock loading is the second major operation in the quarry. Two shovels are on continuous duty —the 75-B Bucyrus-Erie which did such yeoman service in the five years of downhill excavation, and a 100-B Bucyrus-Erie. The latter has a 4-yd. dipper; the former has recently been using a 3-yd. Esco light weight dipper instead of the conventional 2½-yd. bucket. The change has increased output without creating any major problems.

Both shovels are Ward-Leonard controlled. The larger operates on 2,400 volts, the smaller on 440 volts. Also in use is a 50-B Bucyrus-Erie (diesel) sometimes utilized as a crane for rip-rap loading. It can also be used as a shovel for development work. For standby purposes, the company uses a 37 Marion, rheostat-controlled, operating on 440 volts.

The shovels sometimes operate face on, sometimes parallel, depending on the immediate requirements of the operation. Very little bulldozing has been done since the jaw crusher was installed. Oversize rock is either drilled and shot or used as rip-rap.

Hauling is done by end-dump trucks of 12- and 20-cu. yd. capacity: four gasoline-powered Whites, one of which is used chiefly as a standby, and two Sterling diesels. Locomotives, which have been used for hauling in the upper level quarry, are now used only to haul crusher run base rock to storage. All the trucks have heavy-duty rock bodies and rock tires of various makes.

Trucks haul the rock 200 to 600 feet from the shovels to the jaw crushing plant, a much shorter haul than was the case in the upper quarry. Management feels that the trucks provide a flexible means of shovel loading at the quarry face, particularly for rip-rap production.

Operations in New Plant

The trucks dump their load directly into the receiving hopper of the new jaw-crusher plant, down which the rock slides to the first of two Amsco-Brayton manganese-steel apron feeders. Then begins a highly mechanized process. This first feeder handles up to 900 tons per hour, and has four speeds from 15 to 30 feet per minute. It dumps on grizzly with 7-in. spacings.

A second feeder picks up the minus 7-in. undersize rock beneath the grizzly and dumps it on a conveyor, while oversize rock goes to the jaw crusher. This second feeder also handles up to 900 tons per hour. The quarry fines can be screened out in any one of three sizes. These fines, valuable for many commercial purposes, are the direct result of the natural-precrushing which has been going on for many millions of years.

Depending on the size of rock and the production needs of the moment, the conveyors can send some rock either to a commercial carloading bunker on the same level as the jaw-crusher plant, or up above to the secondary crushers and screens of the old plant.

The tough, highly abrasive quality of the granite rock dictated the use of manganese steel at all points of wear in the new facilities. Accessibility and ease of maintenance were also important considerations in the design of the plant.

One of the outstanding features of the new plant is its fully automatic, electrical sequence control operation. All stages of the process are controlled from the main control desk next to the jaw crusher. Along with automatic routing and sequence control, regulation of the speed of the 9-ft. feeder will change the rate of quarry run material flow to the bar grizzly.

An interesting problem of power supply emerged as plans were made for the new plant. The requirement was 2,000 hp of connected load, added to existing plant and power shovel operations, making a total of over 5,300 hp. Since the electrical distribution system was already badly overloaded, it was necessary to find additional capacity. A survey was first made to analyze the plant electrical system with respect to present load, probable load growth due to expansion, and the possibility of securing the most advantageous energy rate from the local power company.

Install Grounding System

An important consideration in the design of the new distribution scheme was the need for a suitable grounding system for the power shovels. The company felt that the ground connection offered by shovel treads on a rocky quarry floor was inadequate, and that there was a resulting hazard to operating personnel in case of fault or insulation failure of any kind. As part of the new arrangement, a suitable grounding system with adequate ground relay protection on all shovel circuits was developed.

Coast Counties Power Company, the public utility which supplies the plant with electrical power, agreed to bring a 22,000-volt circuit onto the plant property and install adequate transformer capacity to supply and meter the power load at 4,160 volts. The utilities company substation was placed on the 100-ft. level, as near as possible to the electrical load center of the plant, and the Granite Rock Company's switch house was located next to the sub-station.

Of the three 4,160-volt, 3-phase, 4-wire feeder circuits emanating from the switch house, one was a shovel feeder circuit for the upper level. This entailed a system that would handle both the 2,400- and the 440-volt shovels. In order to accomplish this from the 4,160-volt supply with adequate ground protection for the shovels, a transformer was located in the shovel circuit adjacent to the switch house, to transform from 4,160 volts to 1,380/2,400 grounded WYE volts.

This circuit was then carried on

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Work to be done ✓
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Hundreds of buckets to pick from — your job, your equipment, and your conditions can be exactly met — and you will get a bucket which really performs.

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overhead poles through the upper level of the quarry with high voltage plugs providing shovel cable connections at convenient locations along the line. To supply power to the 440-volt shovels, a portable transformer and grounding resistor, circuit breaker combination, mounted on skids, was used off this circuit.

For the shovel operations at the lower quarry level, where work is now concentrated, a similar transformer is provided and energized from the main crushing plant feeder circuit at the primary crushing plant site.

Front - End
LOADERS
For Industrial Tractors
Extensible Booms,
⅝-cu. yd., Bucket 8-foot lift,
Backfiller Blades
White Mfg. Co.
ELKHART INDIANA

This shovel impedance grounding system protects against the hazards of dangerous voltages appearing between the shovel and ground, in case there is a ground fault on the system. This is achieved by three means: providing connections at lowest practicable impedance between the shovel frame and ground; limiting the ground fault current to such a value that the potential rise of the shovel frame above ground, due to the voltage drop in the grounding circuit, will never go so high as to be dangerous to human life; disconnecting the faulted feeder circuit as quickly as practicable whenever a questionably high voltage appears.

Grounds for Equipment

The method by which these ends are achieved is three-fold. First, the frames of all shovels and other mobile equipment supplied from the main distribution lines are connected through a ground wire to the sub-station ground. There are a sufficient number of ground connections to lower the impedance to ground to 5 ohms or less.

Second, a resistor was connected between the sub-station ground and the transformer neutral to limit the ground current to a predetermined value so that, in case of a ground fault, the voltage drop in the ground circuit would not cause a dangerous rise in potential above ground of the wire or the frame of any equipment connected to it. Third, the installation of a current transformer and sensitive relay in the lead between the transformer neutral and ground was arranged to trip the shovel feeder circuit breaker with a short time delay, in case a ground fault occurs in the system.

The company believes this scheme of electrical protection is the most positive and practicable yet developed for safe-guarding operating personnel.

Good Safety Record

As in all quarry operations, the safety problem bulks large for this company. But the record is good. Several factors are responsible. A safety poster program is in effect. The superintendent, foremen and men are all thoroughly safety-minded. Manager R. E. Fowle attributes the small number of accidents as well as the production records to employee's good workmanship, a personnel program, and a marked *esprit de corps* throughout the entire organization.

An astonishing number of the Granite Rock Company's personnel have been with the company for many years. Close to half of the 68-man crew have been employed by the company five years or longer. Superintendent Lee Purtill himself has been employed by the company in various capacities for over 20 years. Manager R. E. Fowle joined the staff in October 1929, at that time as a civil engineer.

750 Tons an Hour

The operators of the two big shovels, cousins named Bert Fly and Owen Fly, have been on the job a mere 38 years and 27 years, respectively. Both started their careers with the company. This vocational stability, from top to bottom of the organization, has undoubtedly played a part in its impressive production record. Production capacity is now 750 tons an hour — about 43 times more than 40 years ago. Granite Rock Company personnel have grown up in their jobs and know them well.

The names of other than op-

MOON Generators
TURBO and BELT DRIVEN
for LIGHT and POWER
The Ideal Small Power Plant

IMPORTANT MOON FEATURES

- GOVERNOR AND COMPOUND WINDING on steam-driven models prevent excess voltage output which might injure electrical equipment.
- ONLY 2 EASY-TO-REACH OILING POINTS.
- AUTOMATIC CUT-OFF on larger capacity steam-driven models prevents overload damage to generator.

MODEL 8 (STEAM)

For Lights . . . Ventilating Fans . . Other Electrical Equipment . .

SEND TODAY FOR ILLUSTRATED CIRCULARS.
MODELS FROM 1 TO 7½ KW CAPACITY.

Moon MANUFACTURING CO.
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erating personnel have also been identified with the company for many years. Mrs. Anna R. Wilson is president of the company. John E. Porter is sales manager.

More Varied Products

Now planned by the Granite Rock Company are additional facilities which will result in making their product even more adaptable to the requirements of the market. Increase in screening facilities will make it possible to divide the rock into more sizes, and to make the sized rock more uniform. The resulting products will give less segregation and more accurate combined mixes. The customer who requires a smaller spread in size, particularly in rock for highway maintenance work, will be more readily supplied.

Crushed granite supplied by the Granite Rock Company is used for such purposes as portland-cement concrete pavements, structures, walks, floors, pipe; railroad ballast, asphalt concrete, plant-mix surfacing, Virginia mix, parking-area surfaces, screenings, sewage-disposal plant filters, water-supply filters, chicken and turkey grits, penetration-asphalt macadam, armor coat, retreads, seal coats, drains and rip-rap.

Crusher-Run Uses

The granite crusher-run base goes into bases for highways, runways, parking areas, hard-standing areas, warehouses and factory floors, driveways and walks. It has been successfully used as fill and base material on unstable or sandy soils in connection with railway and highway construction.

To maintain the quality of its product, the company has a well-equipped testing materials laboratory used not only by its own personnel but also by non-company engineers and laboratory technicians who need its facilities.

It is one of the duties of the loading department to keep check on the bunker material levels, the combination of bunker sizes for combined mixes, along with the re-sizing, washing and shipping of the materials ordered.

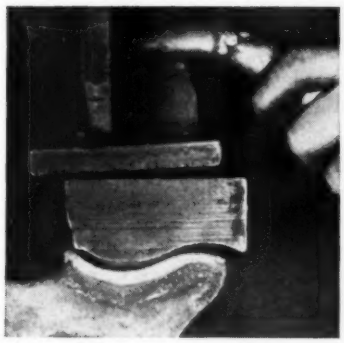
Maintenance Setup

For maintenance and repair, the company uses a combination of specialized and operating personnel. The machine and blacksmith shops, and the electrical department, have special crews for repair, manufacture and maintenance of all the plant and rolling equipment. The electrical department is responsible not only for maintenance and repair, but also for electrical installation and construction.

The shovel crew is responsible for maintenance and repair of their own equipment, working in conjunction with the electrical department and machine shop, while plant personnel have similar duties in connection with plant maintenance, and repair. To reduce maintenance costs, the company makes full use of such materials as abrasive-resistant chute liners, cast-manganese chutes, metal-spray, and hard-surface rod.

Granite Rock Company's operations provide a striking example of the way in which man, nature and machinery can work together in the interests of safe, economical production.

Use COLMONOY for Worn Tractor Sprockets



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It's easy to rebuild worn sprockets with Colmonoy No. 6. Just apply it by acetylene welding. In the case shown, the Colmonoy is heated to a dull red, and hot-formed with a die. The excess extruded Colmonoy is hot wiped off with a metal rod. That's all—and the rebuilt sprocket will last longer than a new one.

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OWEN BUCKETS carry Dunking Insurance

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Day in and day out, on the job in sand and gravel pits and hard at work dredging, Owen Buckets carry "dunking" insurance in the form of sealed, grit proof center shaft bearings.

Abrasive materials are prevented from causing excessive wear and longer bucket life is assured.

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NOT in the *Contract*

The project straw bosses filed into the super's spanking new office for a conference. "Please, boys, don't spit on the floor."

"Why not," said the fat-cheeked pit foreman, "does it leak?"

She: "Don't you wish you were a barefoot boy again?"

He: "Not me, lady: I work on a turkey farm."

Joe—Did the doctor mean it when he said you wouldn't live a week if you didn't stop chasing women?

Henry—I'll say he did—I was chasing his wife.

A contractor appeared in a newspaper office to place an ad offering $100 for the return of his wife's pet cat.

"That's an awful high price for a cat," the clerk suggested.

"Not for this one," said the contractor, "I drowned it!"

A farmer, noticing the hired man with a lantern, asked where he was going.

"Courtin'."

"Courtin'? With a lantern? I never took one when I was courtin'."

"Yeah—and look what you got."

"My husband's new crane operator is a whiz at cable reeving!"

The irate prosecutor whirled on the defendant—"Madam," he shouted, trying to prove a vital point "when you went out with your dog, did you stop any place?"

The courtroom waited tensely for her answer.

"Sir," she answered quietly, "Did you ever take a dog for a walk?"

"Oh, Lord," prayed Sally, "I'm not asking for a thing for myself, but please send Mother a son-in-law."

Skinner: "My pal and I went to hear a speech last night. The guy said skinners and shovel runners were disorderly and undisciplined."

Foreman: "Did you protest?"

Skinner: "Did we? We wrecked the joint!"

"Papa, what is the person who brings you in contact with the spirit world called?"

"A bartender, my boy."

"The Super must think he is a pretty hard guy, doesn't he?"

"He is—he wasn't born, he was *quarried!*"

New Foreman: "How's the water on this God-forsaken project, Mac?"

Shovel Runner: "Well boss, first they boil it, then they filter it—then we drink whisky!"

Contractor: "Darn if I could sleep on that 3-season bed!"

Clerk: "Whadda ya mean—3-season bed?"

Contractor: "No spring."

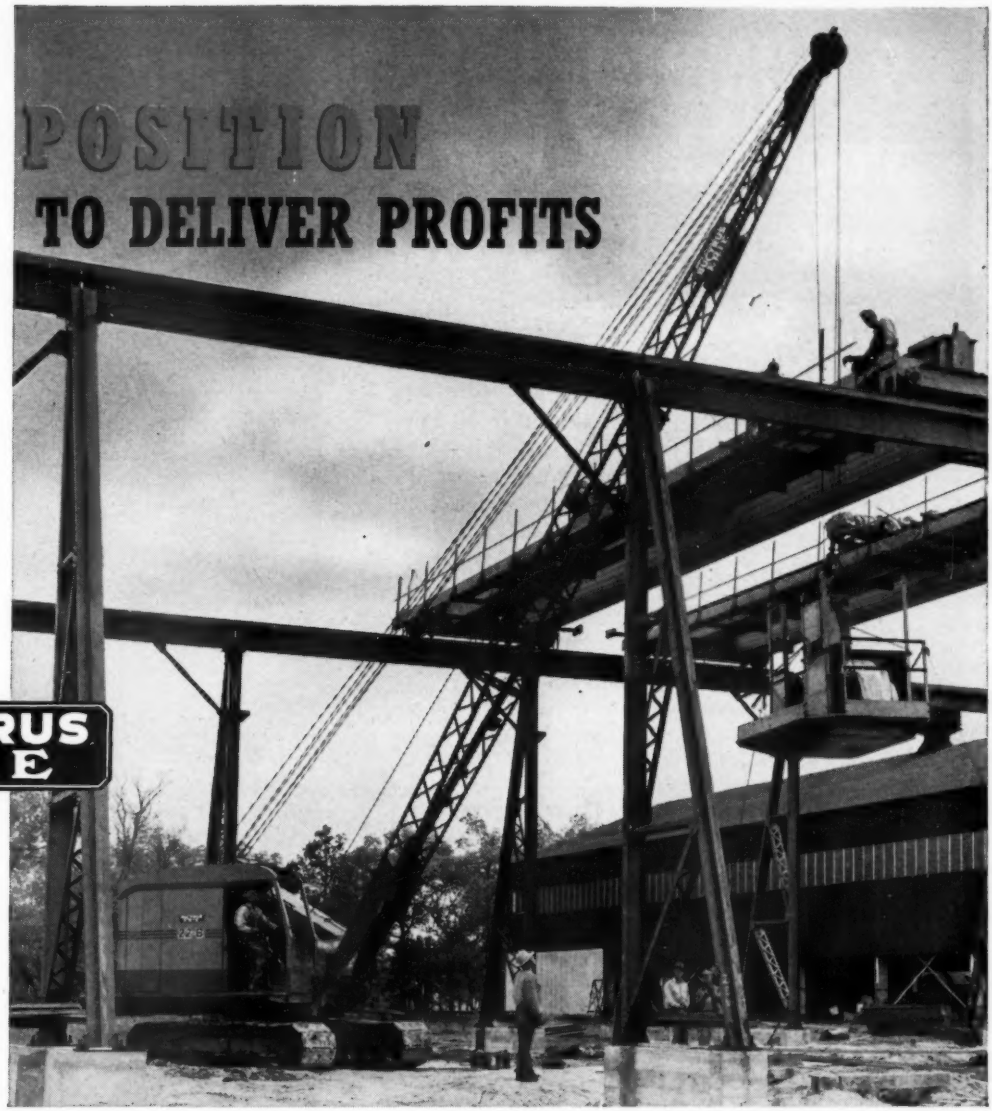
A gangster rushed into a saloon shooting right and left, yelling "all you dirty skunks get outa here!"

The customers fled in a hail of bullets—all except a shovel runner, who stood at the bar calmly finishing his drink.

"Well?" snapped the gangster, waving his smoking gun.

"Well?" remarked the shovel runner, "there certainly were a lot of them, weren't there?"

In POSITION TO DELIVER PROFITS



BUCYRUS ERIE

HIGH LIFTING capacity per pound of weight, and ability to inch loads accurately into place are two big reasons for the outstanding lifting crane service provided by the Bucyrus-Erie ⅜- to 2½-cu. yd. machines.

An independent boom hoist enables the operator to change the boom angle at any point in the cycle and makes possible the delicate positioning of loads that means efficient, economical crane operation. Positive controls make raising and lowering of the boom safe, sure and simple. Unusual balance and stability combined with easy, certain control of swing, hoist and propel increase working speed to produce the fast, effective crane service you need.

Top-flight crane performance is only one of the many features which put the Bucyrus-Erie ⅜- to 2½-cu. yd. line out front in the field. See your Bucyrus-Erie distributor for more information on these outstanding machines.

BUCYRUS-ERIE CO.
SOUTH MILWAUKEE, WISCONSIN

D7E47C

9 DUMPTORS shuttle along break-neck slopes...help haul over 1,000,000 cu. yds rock for KUCKENBERG Construction Co

Probably the toughest construction job in the Pacific Northwest is the new North Santiam highway in Oregon. On approximately 10 miles through mountainous terrain, more than a million cubic yards of rock will be excavated by shovels, loading to a fleet of Koehring Dumptors. An overhaul of more than 15,000,000 station yards along precipitous mountain haul roads is involved.

"There are fills in the 250,000 c.y. class . . . cuts average 50,000 and 60,000 c.y., with some up to 100,000 c.y. — all in rock. From top of one cut to bottom of adjoining fill is a vertical distance of 600'! Hill Lind, veteran Kuckenberg superintendent, says it's the toughest job he's seen in the Pacific Northwest.

Close-Hitched Dumptors Prove Maneuverability

"Real darlings of the fill foreman are the nine 6-yd. Koehring Dumptors. These fast-moving Dumptors shuttle along the precipitous and narrow haul roads from cut to fill, sure-footed as mountain goats. The large rear wheels give remarkable traction in deep, slippery ruts. Because of limited possibilities for maneuvering, the Dumptors were great time-savers, traveling in reverse as fast as in forward gear.

Three Dumptors Haul 434 Loads in 8 Hours

"Speed of unloading is truly amazing, with the drivers spotting the load, dumping and shifting into the return trip all in an instant. Production figures vary greatly on this type of job, but among the better shifts three Dumptors hauled 434 loads in 8 hours.

"Koehring Dumptors proved to be the perfect hauling units for this rugged, mountainside construction."

This job-proved ability to meet the tests of toughest materials and hauling conditions is the reason why scores of leading contractors, like Kuckenberg Construction Company, use Koehring heavy-duty Dumptors. It will pay you to let your Koehring distributor show you how Dumptors cut costs, speed production on your off-highway hauling. See him TODAY.

"Steel teeth protruding upward from loadi edge of the Dumptor body provide protecti from spilling rock for the driver, and afford b ter visibility for the shovel operator in loadin

"The Dumptors race backward and forward a equal speed . . . prove to be great time-saver Air cushions soften the drivers' seats for roug going on the narrow mountainside haul roads

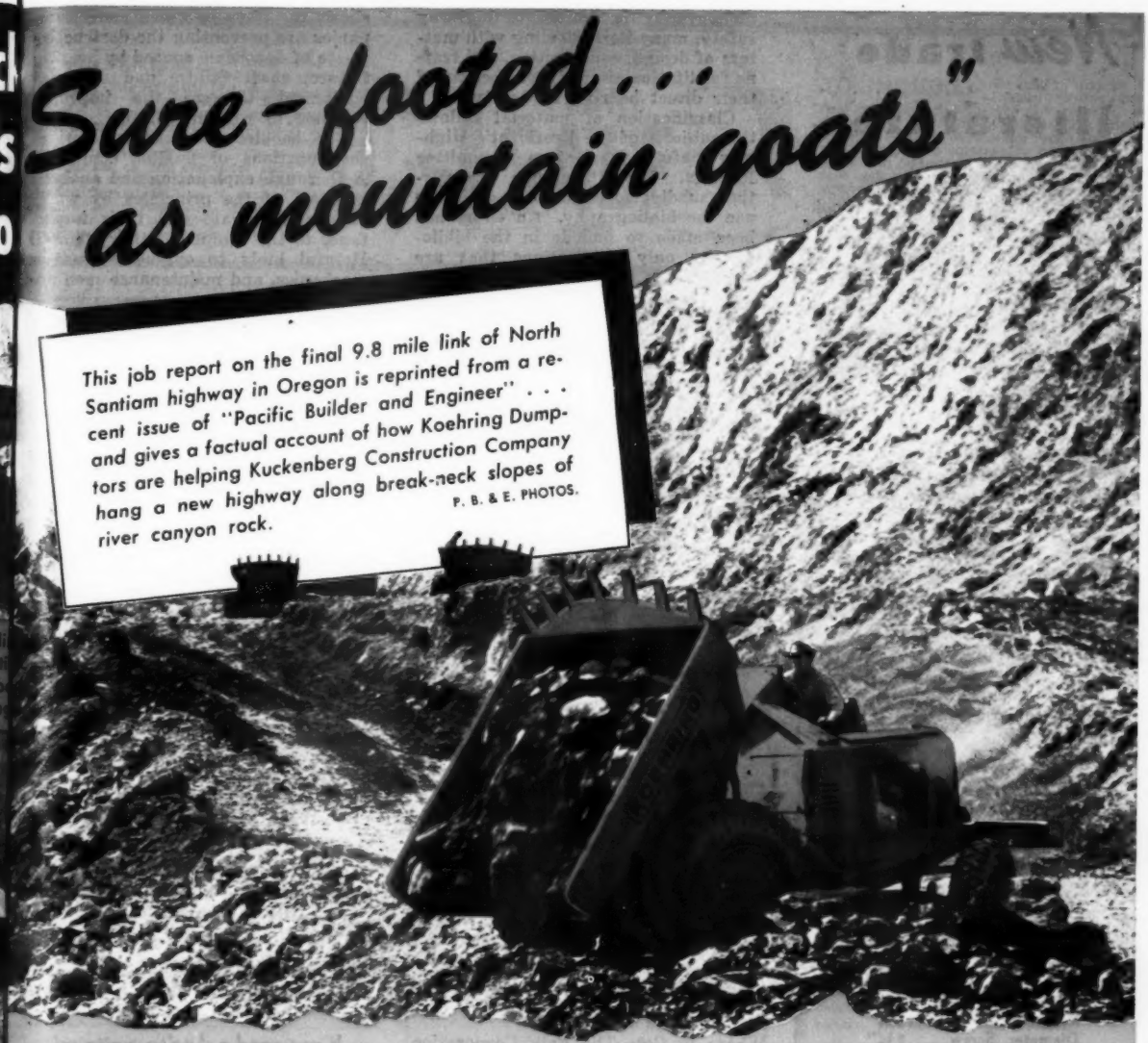
"Dumping in characteristic, fast operation . . hitting the spot, dumping and pulling aw . . . all in an instant. Steel cake (kick-out) p breaks suction . . . keeps mud from sticking

Dumptor — Trademark Reg. U. S. Pat. Off. K858.

Sure-footed... as mountain goats"

This job report on the final 9.8 mile link of North Santiam highway in Oregon is reprinted from a recent issue of "Pacific Builder and Engineer" . . . and gives a factual account of how Koehring Dumptors are helping Kuckenberg Construction Company hang a new highway along break-neck slopes of river canyon rock.

P. B. & E. PHOTOS.



.. ANOTHER KOEHRING HEAVY-DUTY ERFORMER FOR TOUGH ROCK JOBS...

r balanced, high-production teamwork on both ur excavating and hauling operations, team up umptors with the Koehring heavy-duty 605 Rock ovel. Its fast operating speeds . . . big 1½- rd dipper capacity . . . . rugged, extra-strong oom, with shock-absorber mount . . . and big ower-operated clutches, all keep production high, sts low. Other Koehring heavy-duty excavators so available in the ½-yard and ¾-yard sizes.

KOEHRING HEAVY DUTY

New trade literature

Title: "Life-Line" Booklet
Subject: This illustrated 56-page booklet shows the various processes of manufacturing wire rope from wire rods through wire and rope mills. The story is presented in pictures with short captions. Booklet size is 4½" x 5".
Where to Get: Macwhyte Company, Kenosha, Wisconsin. Ask for booklet 48-1 (Free).

Title: "A Selected Bibliography on Highway Safety"
Subject: This 46-page biblography was prepared at the request of the National Committee for Traffic Safety, and contains an annotated listing of selected references on highway safety. Although the scope of the bibliography is limited to highway safety, many items dealing with matters of design, construction, and traffic facilitation are included because of their direct bearing on safety.

Classification of material follows the subjects of the President's Highway Safety Conference Committee Reports. These headings are further subdivided to make it easier to use the bibliography. An effort has been made to include in the bibliography only publications that are currently in print.
Where to Get: Highway Research Board, 2101 Constitution Avenue, Washington 25, D. C. (Price 45c).

Title: TD-24 Tractor Booklet
Subject: Colorfully illustrated, this booklet on the new TD-24 crawler tractor has just been published. Telling the story of the TD-24 in pictures, the booklet has over 50 sectional views, line drawings and photographs of the TD-24 in action.

Among the features graphically illustrated and described are: hydraulically controlled steering system; all-weather starting system; foot-operated hydraulic clutch; synchro-mesh transmission; forward-reverse shifting lever, and "Planet Power" final drive.
Where to Get: International Harvester Company, 180 North Michigan Avenue, Chicago 1, Illinois. Ask for Form No. A-34-LL (Free).

Title: "Backstop" Bulletin
Subject: This 4-page, illustrated bulletin describes the improved Falk Backstop, a unit designed to prevent reverse rotation on conveyor drives, elevator head shafts, windlasses, winches, and on all applications where reverse rotation should not appear. The bulletin features full information on the construction and operating advantages of the unit.
Where to Get: The Falk Corporation, Milwaukee 8, Wisconsin. Ask for Bulletin 10,080 (Free).

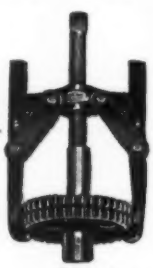
Title: "Relief from Bearing Wear Grief"
Subject: This illustrated 24-page booklet presents an answer to some of the problems of power transmission loss and prematurely worn bearings. It shows the ways in which many companies are preventing the destructive waste of downtime caused by bearing failure, shaft failure and damaged equipment through the improper coupling of rotating shafts.

The booklet thoroughly describes the functions of flexible couplings. A thorough explanation and analysis is given of the principles by which couplings operate and their importance to the equipment they connect. Helpful hints to engineers, master mechanics, and maintenance men are also presented.
Where to Get: American Flexible Coupling Company, Erie, Pennsylvania, Department C-1 (Free).

Title: Cone Crusher Bulletin
Subject: This 4-page illustrated pamphlet describes the Nordberg line of Symons Intermediate Cone Crushers for rock, gravel, and ore reduction. Specification data and operating information are included.
Where to Get: Nordberg Manufacturing Company, Crusher Division, Milwaukee 7, Wisconsin. Ask for Bulletin 151 (Free).

SURPLUS STOCK SALE!

78 Brand New Gear and Wheel Pullers



Popular Size Model No. 1004

The harder the pull, the tighter the arms hug the work. Made of heavy one-piece forged steel yoke. Heat treated forged steel arms and straps.

Will take gears, wheels, etc., up to 18" in diameter.

Diameter	18"
Reach	15½"
Diameter, Screw	1¼"
Length, Screw	16"
Hole adjustment	3 hole
Weight	40 lbs.

Bargain Price $22 ea. F.O.B South Milwaukee

Bucyrus-Erie Co.
South Milwaukee, Wis.

DREDGES

HYDRAULIC
DIPPER
CLAMSHELL

Bolted sectional steel hulls for landlocked, inland waters

If you need a dredge, write us!

AMERICAN STEEL DREDGE CO. INC.
FORT WAYNE 1 · INDIANA · U.S.A.

DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

save time between jobs with JAHN TILT TRAILERS

Tilt—load—and you're off in a matter of minutes with a Jahn Tilt Trailer. No jacks or loading ramps required. One-man operation. Positive, automatic safety lock holds platform in position when loaded or empty. Rubber mounted drawbar absorbs road shocks and protects both truck and trailer. Ideal for transporting tractors—rollers—compressors—shovel-loaders—mixers, etc. Jahn Tilt Trailers are available in 8 ton capacity tandem axle and 5 ton capacity single axle models. Write for specifications and illustrated bulletin or see your nearest Jahn distributor.

C. R. JAHN COMPANY
Dept. 49—1106 W. 35th Street, Chicago 9, Illinois
Heavy duty Trailers from 5 to 100 tons

TO ADVERTISE: All advertising in this section is payable in advance. Rate: 60c per line, or $7.20 per inch of 12 lines. Minimum charge $2.40. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces as punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—15 of preceding month. Example: January closes December 15th.

FOR SALE

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

Bucyrus-Erie Model 320-B 8-cu. yd. Ward-Leonard electric combination stripping shovel and dragline. Caterpillar mounted. Available January, 1948. Located Southwestern Indiana. Box 3259

Bucyrus-Erie 44-B (23957) new 1942 Buda diesel shovel, dragline. Good operating condition. Location, Montana. Priced right. Box 3264.

Marion Type 450 electric shovel — rated 1¼-yd., equipped ⅞-yd. dipper for 3/60/220-440 power. Overhauled and in good condition. Also twelve 6-yd., 2-way 3' ga. dump cars.

West Bros. Brick Company
719 15th Street N.W. Washington 5, D. C.

Bucyrus-Erie 15-B shovel #29829, on standard caterpillar mounting with 16" treads. Equipped with 15'6" shovel boom, 12'6" handle, standard ½ cubic yard cast front dipper with inserted teeth, also including complete drag-shovel attachment consisting of 16'0" boom, 7'0" handle, ½ cubic yard solid type dipper with side cutters for 34" trench.

Norton Brothers
431 Railway Exchange Bldg., Kansas City 6, Mo.

Link Belt Speeder 1½-yd. dragline K-360 Caterpillar diesel, hydraulic controls, 60-ft. boom, 15-ft. extension, gantry. Used on one job. D. T. Frank Estate, 416 Clifton Blvd., East Lansing, Mich.

Barber Greene 24'x18" self propelled rubber belt conveyor for handling coal, stone and sand. Conveyor in good working condition, equipped with screen. Priced for quick sale. Box 3267.

Bucyrus-Erie 34-B 1½-yd. diesel shovel.
Bucyrus D-2 diesel 1-yd. crane-shovel.
B-E 8-yd. electric shovel-dragl., 320-B.
B-E 50-B shovels, diesel, electric, steam.
Draglines, 1½, 2, 2½, 3-yd.
Marion 20-yd. electric dragline, on cats.
Monighan 6-W diesel walking dragl., 6-yd.
NW 1¼-yd. #104 gas crane-dragl.-pull shovel.
Whirley portal gantry cranes, elec., (2).
Buckeye, Austin, P&H trench excavators.
A-C gyratory rock crushers, 27" and 16".
Jaw crushers, 42"x48", 25"x40", 24"x36".
Sturtevant #2 rotary fine crusher, rebuilt.
Plymouth 10-ton gas locomotive, 36" ga.
Steam locos., 17-18 ton, 36 ga., rebuilt.
Shovel front attach., 2⅛ yd., 46" base width.
H. Y. SMITH CO., 828 N. B'way, Milw. 2, Wis.

Two lengths of 2/0 power cable, each one thousand feet long, type SHD with molded ends. Box 3265.

EXCELLENT OFFER

Rebuilt 6-DC-1742 Buda motor power unit less radiator on display: Brinker Supply Company, 6545 Hamilton Avenue, Pittsburgh 6, Pennsylvania. Sale price $4500 cash as is and where is. Reconditioned 100% — new crank shaft and all new bearings installed. Equal and equivalent to new motor leaving factory today.

Caterpillar diesel generator, 15 KW Serial #85474, 60 Cyl. 120-208 V, 4 wire, gas starting. Price net to us, subject to prior sale—$1,700.

Three Heil Model C12 scrapers. 12 cubic yds. capacity. Good condition. Will accept best offer.

CIRCLE CONSTRUCTION CORP.
P.O. Box #424, White Plains, N. Y.
Tel. White Plains 9-9000

For Sale or Rent
With or Without Operators

Int'l. 1943 TD18 wide gauge S# TDR5989 with Bucyrus-Erie 10' bulldozer. Also A.C. Hd7 S#34 year 1940 with Baker dozer.
Osgood 200 with backhoe, shovel, or crane 1946 S#5175 crane, boom and shovel. New.

Riemer Bros., Inc.
2900 Armitage Avenue Chicago 47, Ill.

Heavy duty 25 ton capacity, double crane block with swivel hook & cheek weights, 19" outside sheave diameter. Good condition. Box 3268.

Approx. 1600 feet 2" black pipe—400 feet 2½" gal. pipe—numerous fittings. One Eimco 12B rocker shovel. One Curtis 6½x5" Model C compressor with 25 H.P. A.C. motor. 1—6" 3 stage centrifugal pump direct connected to 150 H.P. motor, with capacity 800 G.P.M. against 450 ft. head. All excellent condition. Available now. Hydraulic-Press Brick Company, Peoria, Illinois.

For Sale or Lease

Rock land seam 40 feet thick; overburden from 0 to 30 feet, lime test 90 to 93. O.K. for road surfacing, unlimited market. One mile from paved road. ⅜ mile to railroad. Near Camp Ellis, Fulton Co., Ill. Nearest rock company of any size from here is Princeville, Ill. This is only rock in Fulton county.

Tony Tomlianovich
Canton, Illinois

One Bucyrus-Erie 15-B shovel attachment. Nearly new. Located Central Kansas. Box 3266.

USED 18" OR 20" ELECTRIC HYDRAULIC DREDGE. MID-WESTERN LOCATION. BOX 3251

MECHANICS • HOME STUDY

Step up your own skill with facts & figures of your trade. Audels Mechanics Guides contain Practical Inside Trade Information in handy form. Fully illustrated. Easy to Understand. Highly Endorsed. Check book you want for 7 days' Free Examination. Send no Money. Nothing to pay postman. ☐Carpentry $6 • ☐Auto $4 • ☐ Oil Burners $1 ☐Sheet Metal $1 • ☐Welding $1 • ☐Refrigeration $4 ☐Plumbing $6 • ☐Masonry $6 • ☐Painting $2 • ☐Radio $4 ☐Electricity $4 • ☐Mathematics $2 • ☐Steam Engineers $4 ☐Machinist $4 • ☐Blueprint $2 • ☐Diesel $2 • ☐Drawing $2. If satisfied you pay only $1 a month until price is paid. **AUDEL, Publishers, 49 W. 23 St., New York 10, N. Y.**

Surplus Swivel Hook Double Sheave Blocks

1 10 ton "American" 14" swivel hook double sheave block, diamond pattern with cast steel sheaves bushed with self-lubricating bronze bushings. Grooved for ¾" rope. Groove diameter 10½" equipped with 100 lb. cheek weights 2½" swivel hook. Approximate shipping weight 235 lbs. American Hoist & Derrick Co. Dwg. 1-M-6560.
1 40 ton "American" 24" swivel hook double sheave block, diamond pattern with cast steel sheaves grooved for ⅞" rope. Sheaves to be bushed with plain bronze bushings, with center bored sheave pin and ¼" Alemite hydro grease fitting No. 1980 equipped with 300 lb. cheek weights and 6½" swivel hook. Total weight of block 1190 lbs. Dwg. BEFP 1-M-6560.

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

TD-40 International tractor completely rebuilt with 4-½ yard four wheel Bucyrus-Erie scraper, complete with hoist and ropes. Excellent condition.

Kentucky Clay Mining Company
Mayfield, Kentucky

ALL-STEEL DERRICKS

19—30 ton capacity BRAND NEW Wiley all steel stiffleg derricks, 32' masts, 60' booms, complete; can furnish with gasoline, electric or steam hoists.

ALSO

Air compressors, bins, boilers, cable, conveyors, cranes, crushers, engines, hammers, conc. mixers, light plants, pneumatic tools, pavers, pumps, saw rigs, welders.

EQUIPMENT CORPORATION of AMERICA

CHICAGO 12	PHILADELPHIA 2
1170 S. Washtenaw Av.	1505A Race St. Sehaff Bldg.
PITTSBURGH 30	NEW YORK 7
P.O. Box 933D	30D Church Street

SURPLUS STOCK SALE

Dippers for Bucyrus-Erie Shovels

1—½ cu. yd. drag shovel dipper—17-B.
1—2 cu. yd. rock dipper 75-B.

New Dragline Buckets

2¼ yard Red Arch Type AX medium duty bucket.
5 yard Red Arch Type AY heavy duty bucket.
6 yard Red Arch Type AY heavy duty bucket.

F.O.B. Works
Write for any further information desired

BUCYRUS-ERIE COMPANY
Parts Department
South Milwaukee Wisconsin

4 Mississippi wagons Model 75, 8½ yds. struck, diesel-powered. "The world's most modern hauling unit." Price $7,500 each. New price on these machines is over $12,000 each. Jerry G. Alexander Co., Box 245, Hattiesburg, Miss., Tel. 1244 W.

(Classified continued on page 64)

For Sale

(Continued from page 63)

Complete chain crowd shovel front for Bucyrus-Erie 37-B (No. 12863). In good condition, used only two years. $2500. Box 3262

Dragline conversion equipment for Bucyrus-Erie 120-B shovel, 90' boom, 4 yd. bucket. Has never been used. Central location. New equipment. Box 3254

Wanted: Complete shovel front, new or equivalent, for Model 855 P&H. 523 University Bldg., Denver, Colorado.

POSITIONS WANTED

Shovel operator experienced in operating Bucyrus-Erie electric machines desires permanent employment. Age 41 years, can furnish excellent references. Box 3261

Notes from the manufacturers

Bemiss Equipment Corporation, Richmond, Virginia, will hold the formal opening of its new building and plant April 22. The building, of brick and reinforced concrete construction, includes shop, service, and parts departments, a show room, general and executive offices. It covers more than 23,000 square feet.

Seventeen factory-trained employees, under the supervision of Jack Frank, formerly of the engineering and service department of Allis-Chalmers Company, will work in the shop and service department.

Parts department, with a personnel of six, is managed by G. L. Tremearne, assisted by C. E. Clark, Jr.

Headed by W. C. Coleman, Vice-President of the firm, the sales department, which will cover the Richmond area and the eastern part of Virginia, includes the following men: S. E. Tudor; A. G. Wilkerson; E. T. Harrison; L. H. Meem; A. D. Willis, Jr.

Air Reduction Pacific Company, San Francisco, California, the new subsidiary of Air Reduction Company, Incorporated, announces the appointment of four vice presidents.

The names and respective districts of the new vice presidents are: L. A. Hamilton, Seattle; E. W. MacCorkle, Jr., Portland; H. W. Saunders, San Francisco; H. A. Hoth, Los Angeles.

The company's Seattle District, with offices at 3623 East Marginal Way, Seattle, includes nearly all of the state of Washington, the northern part of Idaho, and part of Montana.

The Portland District, with offices at 430 N. W. 10th Avenue, Portland, includes the state of Oregon, the southern half of Idaho, and a part of the state of Washington in the vicinity of Walla Walla.

The San Francisco District has offices at 1485 Park Avenue, Emeryville, California. It includes northern California north of the Kern County line, as well as most of northern Nevada and northern Utah.

The Los Angeles District, with offices at 2423 E. 58th Street, Los Angeles, includes Southern California, most of the state of Arizona, and parts of southern Nevada and southern Utah.

Air Reduction Pacific Company produces and sells oxygen, acetylene, and the necessary apparatus for the oxy-acetylene cutting and welding processes. It also distributes arc welding machines, and equipment and supplies for electric welding.

Davey Compressor Company, Kent, Ohio, announces the appointment of C. R. Smith & Sons, Incorporated, Youngstown, Ohio, as a Class "A" dealer. The new dealer will cover the city of Alliance and the Ohio counties of Mahoning, Trumbull, and Columbiana. In Pennsylvania, its coverage will include the City of Sharon.

The Smith Company will handle the entire Davey line, including Air Chief trailer compressors; Auto-Air (truck-mounted) and Track-Air (tractor-mounted) machines; departmental industrial units; mine and railcar compressors; Da-V-Lite portable lighting equipment; and Davey Heavy Duty Power Take-offs for trucks.

The Buffalo-Springfield Roller Company, Springfield, Ohio, announces the appointment of Murray D. Shaffer as Director of Sales and Research Consultant.

Gar Wood Industries, Incorporated, Wayne, Michigan, has appointed Walter C. Robertson Vice President in charge of Export for all three divisions of the company. During the past 11 years, Mr. Robertson has been the company's Vice President in charge of National Accounts.

The Cooper-Bessemer Corporation, Mount Vernon, Ohio, has announced the elevation of three of its sales executives to positions of Vice President. These include J. W. Reed, the company's Atlantic Coast Manager of The Gas Engine and Compressor Division; A. A. Burrell, Southwestern District Manager, with headquarters in Dallas; and B. L. Potter, Midcontinent Manager, with headquarters in Tulsa, Oklahoma.

The Euclid Road Machinery Company, Cleveland 17, Ohio, announces the appointment of Ferguson Supply Alberta Ltd. of Calgary as exclusive distributor for the entire Canadian Province of Alberta. The appointment of this new distributor will provide improved service and parts facilities to contractor and industrial owners of Euclid equipment in Alberta.

Westinghouse Electric Corporation, Pittsburgh 30, Pennsylvania, has appointed F. D. Weatherholt as Assistant Industrial Sales Manager with headquarters at East Pittsburgh.

Mack Trucks, Inc., New York City, New York, announces the election of A. N. Morton and A. C. Fetzer as Vice Presidents. Both Mr. Morton, who is in charge of the company's manufacturing operations, and Mr. Fetzer, General Sales Manager, will continue to make their headquarters at the firm's home offices, Empire State Building, New York City.

Timken Roller Bearing Company, Canton 6, Ohio, announces the retirement of Pardee H. Frank, Service Manager of the company for the past 27 years. He will be replaced by Elmer Anderson, who has been Assistant Service Manager for the past year and a half.

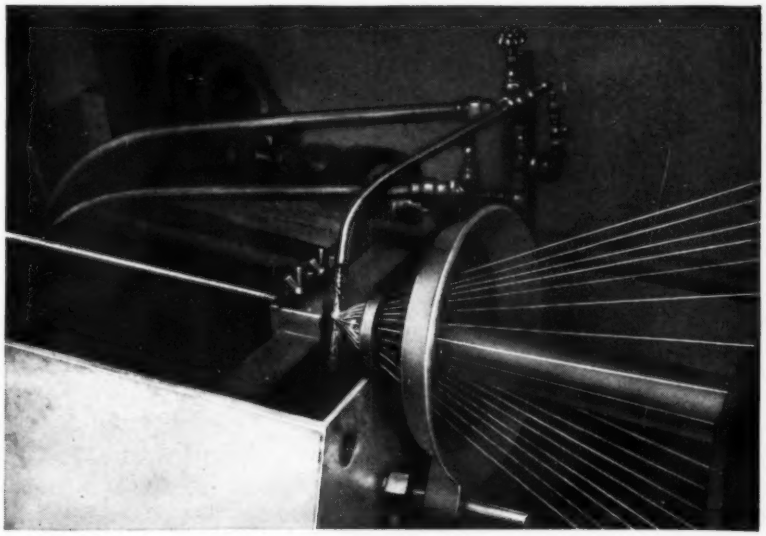
Beckwith Machinery Company, Pittsburgh, Pennsylvania, has named L. E. Samuelson as General Parts and Service Manager. Mr. Samuelson will coordinate and direct the Parts and Service Departments at Pittsburgh and Bradford, Pennsylvania.

Robins Conveyors Division, Hewitt-Robins, Inc., Passaic, New Jersey, announces the appointment of the Galigher Company, 545 West Eight South Street, Salt Lake City 4, Utah, as exclusive representative for the entire state of Utah, and parts of Idaho, Montana, Nevada, and Wyoming.

Also announced by Robins was the opening of a new sales office at Kansas City, Missouri. It will be headed by C. Boyd Goodhart and will be located at 5172 Tracy Street.

LeRoi Company, Milwaukee 14, Wisconsin, announces the establishment of a Central District sales office in Milwaukee. Norman M. Sedgwick has been appointed Manager of the district which embraces Ohio, Michigan, Indiana Illinois, Wisconsin, Iowa, Nebraska, North and South Dakota, Minnesota, Ontario, and Manitoba.

The new sales office is located at 6619 West Mitchell Street, adjacent to the main LeRoi plant. Its staff consists of six experienced sales engineers, located in Cleveland, Chicago, Ironwood (Michigan), and Milwaukee.



Hot Oil Treatment for Steel Muscles

THIS 82-PAGE BOOK ON WIRE ROPE IS FREE. WRITE FOR YOUR COPY TODAY!

Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made their work easier. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write—Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Mass.

Field lubrication of wire rope does much to prevent friction and corrosion, but it is only a surface treatment. To provide proper *internal* lubrication, every strand of Wickwire Rope is actually formed in a stream of hot lubricant. This quick-setting lubricant packs the many spaces between the wires of the strand.

Fiber cores, too, are saturated with a compound that lubricates the strands during the service life of the rope. This built-in protection is the result of years of study to develop a lubrication system that would protect ropes against friction, corrosion and other factors which bind ropes and result in loss of strength and rope life.

Thorough lubrication is only one step in the quality control of Wickwire Rope manufacture—but we at Wickwire believe that *every* step is important to assure finished rope that will provide the utmost in performance, safety and long life.

Wickwire Distributors and Rope Engineers are always ready to help solve your wire rope problems and supply the right rope for your needs. Wickwire Rope is available in all sizes and constructions, both regular lay and WISSCOLAY *Pre*formed.

WICKWIRE ROPE

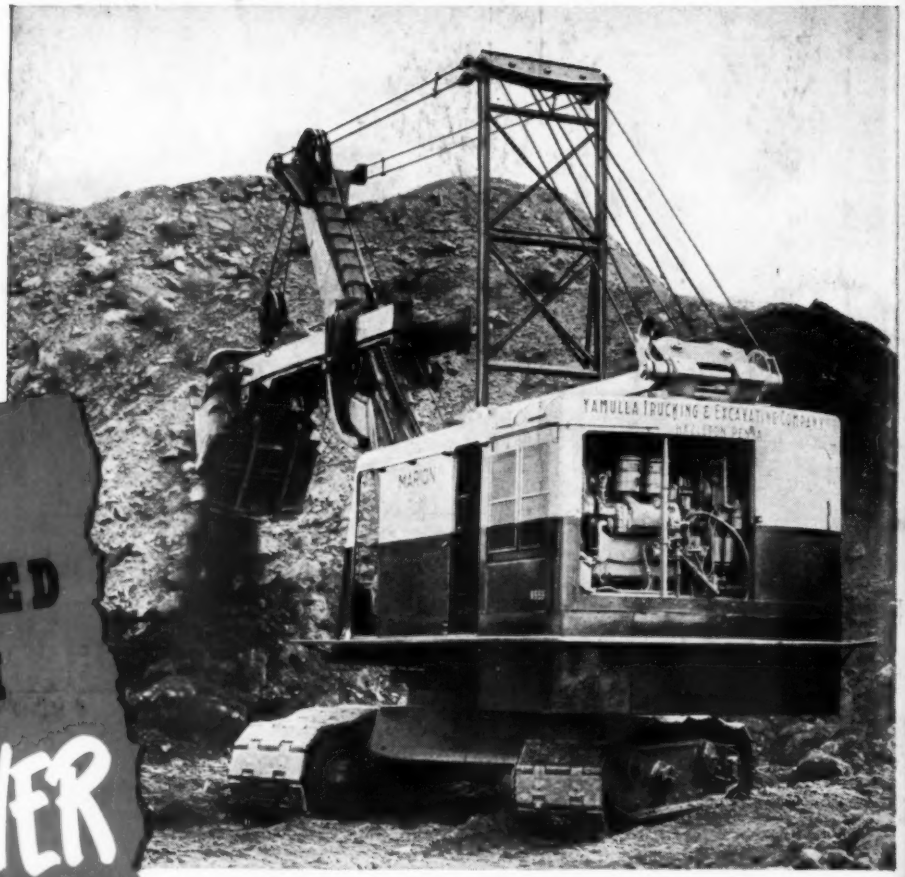
CF&I & SUBSIDIARIES

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass. **EXECUTIVE OFFICE**—500 Fifth Avenue, New York 18, N. Y.

SALES OFFICES—Abilene (Tex.) • Boston • Buffalo • Chattanooga • Chicago • Denver • Detroit • Emlenton (Pa.) • Fort Worth • Houston • New York • Philadelphia • Tulsa

PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corporation, Oakland 6, California



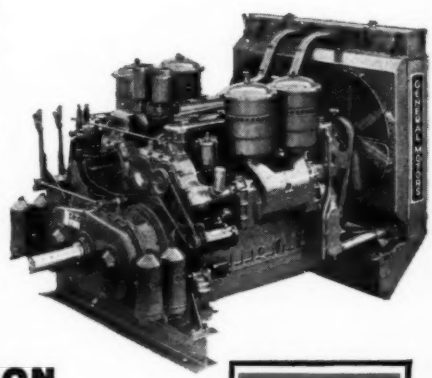
JUST CRAMMED WITH POWER

Marion 111-M 3½ cu. yard shovel strip mining for Yamulla Trucking and Excavating Company of Hazelton, Pennsylvania.

TAKE the case of the Marion 111-M 3½ cu. yard shovel. Here's equipment that calls for plenty of power fitted in a compact cab. This is where a General Motors "Twin" does a masterful job, because it makes available 330 husky, dependable horsepower.

Of course, the Yamulla Trucking and Excavating Company like their new shovel. The smooth electric swing, the snappy mechanical scoop, the economy of fuel and the dependability of its GM Diesels would please any shovel operator.

Discover what GM Diesel power can do for you as a prime mover or in fine contractor's equipment. Get the story from your local GM Diesel dealer or write direct to us.



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